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THE UNIVERSITY OF ALBERTA

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM - UNIVERSITY OF ALBERTA HOSPITALS

BY

© M. KATHLEEN GRAHAM

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF NURSING

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM - UNIVERSITY OF ALBERTA HOSPITALS submitted by M. Kathleen Graham in partial fulfillment of the requirements for the degree of Master of Nursing.

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Date: June 21, 1988

ABSTRACT

This study was designed to contribute to the evaluation of the Critical Care Orientation Program (CCOP) offered at the University of Alberta Hospitals. This paid eight week orientation program was designed to introduce nurses to the critical care needs of adult patients in the Coronary, Cardiovascular, General, and Neurosurgical Intensive Care Units. Stufflebeam's (1971) Decision Making Model provided the framework for this evaluation and emphasis was placed primarily on product evaluation.

To assist in product evaluation a questionnaire was designed and piloted. The questionnaires were mailed and 43 of the 104 graduates participated. The questionnaire consisted of a biographic section and a five point Likert-type self-rating scale of clinical competency that focused on skills used in critical care nursing. The majority of the sample were single, less than 30 years of age and had no dependents when they were in the CCOP. No bias in the sample could be detected in terms of the session attended, the intensive care unit of employment, or average grade in the program although graduates who had left the hospital were under represented. There was a tendency for those who did well on grades in the program to also do well on the clinical competency score.

Thirty of the 43 subjects gave consent to contact their immediate supervisor following completion of the CCOP.

Supervisors were requested to complete the same clinical competency scale to strengthen the results of the self reports. Only five of the 30 supervisor questionnaires were returned and no analysis was conducted due to inadequate sample size.

Using Stufflebeam's (1971) framework, the CCOP was evaluated and recommendations made to assist with the delivery of a program to meet the needs of the patients and the institution. The final decisions will be made by senior administrators within the reality of the political environment but the evaluation will provide much needed information to these administrators and to the educators associated with the program.

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CHAPTER I

INTRODUCTION

The phenomenal rate of growth of critical care units, increasing acuity and rapid advances in medical science and technology have necessitated advanced clinical nursing education (Brault & Pflaum, 1979). Critical care nursing education has been promoted as a means of providing a high standard of nursing care to the critically ill (Roberts et al., 1986). However, a shortage of adequately trained critical care nurses jeopardizes the ability of hospital administration to supply personnel needed to provide optimal patient care (Johnson, 1988). Therefore, the provision of orientation programs aimed at ensuring minimal competency in critical care nursing has become a necessity (Roberts et al., 1986). In addition, education programs may contribute to the recruitment and retention of qualified staff (Dear, Weisman, Alexander & Chase, 1982; Tobin, Wise & Hull, 1979). Critical care orientation and continuing education programs have become integral components of a rational plan to meet hospital critical care nursing demands.

UAH Critical Care Nursing Education

Prior to April, 1986, the Cardiovascular, Coronary Care, General Systems, and Neurosurgical Intensive Care Units at the University of Alberta Hospitals (UAH) provided their own orientation programs which resulted in a mixture of programs of varying lengths and complexity. With the implementation of the Critical Care Orientation Program (CCOP), all new employees who lack related clinical experience are enrolled in the eight week course.

The CCOP was primarily established to train sufficient personnel to staff the 50 bed increase in the critical care units that resulted from the opening of the Walter C. Mackenzie Health Sciences Centre. The provincial government provided start-up funds for this purpose. In addition to the new increased demand for staff, there had been a general shortage of critical care nurses and unit staff vacancies had been as high as 40%. The new program was designed to introduce nurses to the concepts of critical care nursing and to assist them in practicing competently within the critical care areas as Level One or "junior" nurses (Mealey, 1986).

Evaluation of the program presently consists of students' grades on a series of quizzes and a final examination (see Appendix A). The six quizzes are presently worth from 5 to 10 points each. Scoring each 10-item quiz equally and then weighting these scores to reflect the most critical content would permit more flexibility in creating a meaningful tool and facilitate analysis. The relationship between multiple choice quizzes and the short answer final examination has not been established for content tested or consistency of methods. Indeed, the students' first experience in the course with the short answer format is on the final examination where short answers account for over 70% of the marks. The students complete a post-course evaluation (see Appendix B) which consists of yes or no forced-choice responses and sections for open ended comments. A wider selection of responses would be more informative. Informal feedback from the four Nursing Unit Supervisors and six Unit Based Instructors has been also solicited to attempt to evaluate the impact of the program.

The inherent costs of such a program include student salary (estimated at Level II RN - $14.71 per hour x 7.5 hours per day x 40 days = $4,500, UAH Collective Agreement, 1986), plus Instructor costs (estimated at Level V Instructor - $18.36 per hour x 7.5 hours per day x 40 days = $5,508) and course costs. It was, therefore, considered prudent to evaluate the program which in essence meant estimating the program's worth, assessing its strengths and weaknesses, and making decisions as to its value, permanence and salience (Leonard, 1986).

Evaluation Models

Selecting a model to guide evaluation is a key step. Having many models can help develop alternative views but conversely makes selection more difficult (Sohn, 1987). There is little practical help available in selecting a model although in theory one must consider purposes, needs, resources, and time. To add to the dilemma, an evaluator is not expected to adhere rigidly to a selected model. Models are often tailored to the situation or an eclectic approach may be chosen. The selection process requires a review of the education and nursing education literature.

Literature Review

Historical Development of Evaluation

Evaluation of education programs has evolved as a result of contributions from three major eras (Worthen & Sanders, 1973). The pre-1930s era provided the first recorded program evaluation when Rice completed a comparative study of the spelling performance of 33,000 students (Popham, 1975). During this era, Thorndike was instrumental in promoting the measurement of human change. The focus on school children led to the later development of standardized achievement tests, personality and interest tests. Industry and the military began using tools for selection and classification of personnel and refined these tools during World War II.

The second era of evaluation from about 1935 to 1957 was more similar to present concepts of evaluation. Fuelled by the accreditation movement in education, Tyler's Eight Year Study (Smith & Tyler, 1942) was a longitudinal survey to determine the effectiveness of a program to meet its behavioral objectives. This estimation of goal achievement (Scriven, 1967) excludes events during the actual process of learning. The need to consider the value of the objectives and the process components led directly to the evolution of the third era.

From the early 1960s to the present, the third era has focused on the implementation of the judgement component of evaluation models and formulation of a conceptual framework for curriculum evaluation (Scriven, 1967). Recently there has been a movement towards decision-making strategies that require the collection of information in order to judge a program.

Evaluation in the twentieth century has moved from structured measurement of behavioral objectives to less structured methods and goals. Models incorporating both structured and unstructured approaches are now specifically reviewed.

Current Models

Current models examine the achievement of the objectives consistent with Tylerian methods of the first era. In addition, these models examine the worth of the objectives which is the distinctive element of the third era. The inherent assumption in this third era appears to be that outcomes will always be meaningful if they are based on meaningful and reasonable goals.

Worthen and Sanders (1973) have critically surveyed the models and created three major categories for evaluation frameworks: (a) judgemental strategies, (b) decision management strategies and (c) decision objective strategies. Each category is briefly described and a representative model presented.

The first category, judgemental strategies, requires the evaluators to make judgements based on their data analysis. These evaluation strategies explicitly emphasize judgement as a critical procedure in evaluation studies. This category includes models developed by Cronbach (1963), Scriven (1967) and Stake (1967).

Stake's Countenance Model (1967) uses formal inquiry to collect data from numerous sources with respect to outcomes. Data are separated into two categories. Rationale, intents and observations are placed in the description dimension while standards and judgements are placed in the judgement dimension. Information is then gathered on these dimensions and arranged in relative time order under the categories of antecedents, transactions and outcomes. Observational data collected in each dimension are evaluated for congruency to predetermined fixed standards. Relative standards compare the program under review to other programs while absolute standards are individual opinions about the validity of program approaches. A priority ranking of the standards leads to the judgement. These two types of decisions appear to be comparable to formative and summative evaluation.

Stake's framework results in a decision about the worth of the program based upon the relative importance of factors in the program that were established a priori. A fairly high level of objectivity by the evaluator may be obtained since objectives and standards must be pre-established and used in the judgement process.

Worthen and Sanders' (1973) second category consists of decision-management models. These models require nonjudgemental processing with the primary emphasis being placed on program description. The information is then submitted to the formal decision makers in the organization. The works of Alkin (1969) and Stufflebeam (1971) are examples of this category.

Stufflebeam's Decision Making Model (1971) is designed to help decision makers make decisions more effectively at any stage of a program. The model combines four stages of evaluation: context, input, process, and product (CIPP). Context evaluation determines and assesses objectives in relation to identified problems thereby focusing on planning decisions. Input evaluation deals with programming decisions by considering program structure, design and resources in relation to program objectives. Process evaluation focuses on implementation decisions and operational control while product evaluation recycles decisions to judge and react to them.

Stufflebeam's model is practical because it provides continuous feedback and recognizes diverse contextual factors. The four stages of CIPP appear to parallel the nursing process which is a problem solving approach to patient care that requires assessment, planning, intervention, and evaluation (Leonard, 1986). However, the CIPP model places little emphasis on judgements and values and may be expensive and time consuming to design and implement.

The third category of evaluation models includes the works of Hammond (1969), Provus (1969), and Tyler (1942). These decision-objective models base decisions on the achievement of objectives. However, the role of the evaluator is consistently unclear.

Hammond's (1969) model focuses on the definition and measurement of behavioral objectives within institutional, instructional and behavioral dimensions. The initial identification and defining of objectives may be costly and time consuming but once established the objectives can be utilized by diverse personnel to carry out the evaluation process. As with other decision-objective models, Hammond's model neglects the judgemental aspect of the evaluator.

The intent of this overview of evaluation models has been to identify or guide development of a model suitable for evaluating the UAH Critical Care Orientation Program. Worthen and Sanders (1973) have compared and contrasted the models in detail and the reader is referred to this source for further information. The major evaluation models reviewed in this discussion have been summarized in Table 1 which is based on work by Worthen and Sanders (1973, p. 210-215).

Reviewing the literature, it is unusual for an evaluator to use only one approach to evaluate a program and even more unusual to find a model being used without modification. Rather than dictate, the models may provide various formats to assist the evaluator in identifying relevant elements and formulating an individualized approach for each project. Shipp (1981) has gone so far as to recommend evaluation using a cost-benefit/effectiveness analysis for continuing education based on cost accounting principles. This approach evaluates benefits of education, not in terms of attainment of educational objectives but, as changes in organization activity associated with knowledge and/or skills gained through continuing education. The argument supporting analysis beyond educational attainment is consistent with other authors' recommendations for the evaluation of continuing education (e.g., Nevo, 1983; Sohn, 1987).

CCOP Evaluation

Young and Willie (1984) have discerned four levels of evaluation of continuing education in the health fields. First level evaluation is concerned with participant satisfaction and is often referred to as the "happiness index". The CCOP post course evaluation (see Appendix B) is a first level tool. Second level evaluation assesses practitioner competence and usually includes

Table 1

Comparisons of Contemporary Evaluation Models on Selected Characteristics

Characteristic	Stake	Hammond	Stufflebeam
Definition	Describing and judging an educational program	Assessing effectiveness of current & innovative programs at the local level by comparing behavioral data with objectives	Defining, obtaining and using information for decision-making
Purpose	To describe and judge educational programs based on a formal inquiry process	To find out whether innovation is effective in achieving expressed objectives	To provide relevant information to decision-makers
Key Emphasis	Collection of descriptive & judgmental data from various audiences	Local program development	Evaluation reports used for decision-making
Role of Evaluator	Specialist concerned with collecting, processing, & interpreting descriptive & judgmental data	Consultant who should provide expertise in data collection. He is also a trainer of local evaluators (program personnel)	Specialist who provides evaluation information to decision-makers

Table 1 (continued)

Characteristic	Stake	Hammond	Stufflebeam
Relationship to Objectives	Examination of goal specifications & priorities. Identification of areas of failures & successes. It is up to the evaluator to assist in writing behavioral objectives	Evaluation focuses on the definition & measurement of behavioral objectives	Terminal stage in context eval. is setting objectives; input eval. produces ways to reach objectives; product eval. determines whether objectives are reached
Relationship to Decision-Making	Descriptive & judgmental data result in reports (including recommendations) to various audiences. Judgments may be based on either absolute or relative standards	Evaluation is the source on which to base decisions about instructional, institutional & behavioral dimensions	Evaluation provides information for use in decision-making
Types of Evaluation	1. Formal vs. informal	1. Instructional dimension 2. Institutional dimension 3. Behavioral dimension used for describing programs	1. Context 2. Input 3. Process 4. Product

Table 1 (continued)

Characteristic	Stake	Hammond	Stufflebeam
Constructs Proposed	1. Data matrices: description (intents & observations) & judgment 2. Processing descriptive data; contingency among antecedents, transactions, outcomes; congruence between intents & observations 3. Bases for forming absolute & relative judgments	1. The application of evaluation design to existing program 2. Decisions about adequacy of current program in relationship to the objectives 3. Feedback from 2. leads to innovation 4. Application of evaluation to innovation itself 5. Notation that feedback could continue	1. Context eval. for planning decisions 2. Input eval. for programming decisions 3. Process eval. for implementing decisions 4. Product eval. for recycling decisions
Criteria for Judging Evaluation	1. Should be panoramic, not microscopic 2. Should include descriptive & judgmental data 3. Should provide immediate relative answers for decision-making 4. Should be formal (e.g. objective, scientific, reliable)	1. Related to behavioral objectives 2. An on-going process 3. Provides feedback on goal achievement for program modification 4. Uses local personnel, and is part of local educational program	1. Internal validity 2. External validity 3. Reliability 4. Objectivity 5. Relevance 6. Importance 7. Scope 8. Credibility 9. Timeliness 10. Pervasiveness 11. Efficiency

Table 1 (continued)

Characteristic	Stake	Hammond	Stufflebeam
Implications for Design	Very general structure. Matrices should be included in design	1. Use of multi-variate structure--focus on interactions of dimensions 2. Generate empirical research 3. Necessity for inclusion of local personnel	1. Experimental design not applicable 2. Use of systems approach for evaluation studies 3. Directed by an administrator
Contributions	1. Provide a systematic method for arranging descriptive & judgmental data emphasizing inter. & intra-relations between them 2. Considers both absolute & relative judgment 3. Requires explicit standards 4. Generalizability of the model	1. Makes use of local personnel who can carry on evaluation process once initiated 2. Considers interaction of several dimensions & variables 3. Provides feedback on program development & revisions; stresses self-evaluation 4. Requires specification of behavioral objectives	1. Provides a service function by supplying data to administrators and decision-makers charged with conduct of the program 2. Is sensitive to feedback 3. Allows for evaluation to take place at any stage of the program 4. Wholistic

Table 1 (continued)

Characteristic	Stake	Hammond	Stufflebeam
Limitations	1. Inadequate methodology for obtaining information on key constructs 2. Some cells of design matrix overlap; some distinctions not clear 3. Possibility of leading to internal strife within program value conflicts possible	1. Difficulty of quantifying data involving several dimensions & variables 2. May be complex & time-consuming to set up 3. Possible fixation of evaluation on the "cube" 4. Neglects judgmental dimension 5. Motivation problem in local personnel	1. Little emphasis on value concerns 2. Decision-making process is unclear; methodology undefined 3. May be costly & complex if used entirely 4. Not all activities are clearly evaluative

measures of knowledge, skills and attitudes often before and after participation in educational activities. The CCOP quizzes, certification examinations and final examination are second level evaluations and are administered after the course content has been presented. The average grade on the final examination is 84%. The cumulative grade for successful completion of the five week theory component is 60% and the average cumulative grade is 85%. Given the relatively high average grade and the lack of established validity for the quizzes and examination the current testing has not been very discriminative. There have been no pre-tests used to measure change in knowledge levels but this type of testing would be consistent with second level evaluation.

Third level evaluation focuses on practitioner performance and searches for application of knowledge and skills in the work setting. No formal third level evaluation of Critical Care Orientation graduates exists at present and there appears to be a paucity of research studies at this level.

Fourth level evaluation is directed toward patient health outcomes. Rather than examining the professionals, fourth level evaluation examines the recipients of the professionals' services. This type of analysis assumes the goal of continuing professional education is the improvement of patient health and care. Patient outcome research has not been included by the CCOP and is rare in the literature (Bachrach et al., 1988).

Third and fourth level evaluations focus on outcomes in terms of nursing care and patient health. Donabedian (1969) has classified three approaches for the evaluation of nursing care: structure, process and outcome. Structural evaluation consists of describing the allocation of administration, organization and resources. Process evaluation considers actual nursing care given while outcome evaluation assesses the end results of care. Process and outcome measures appear to correspond to third and fourth level evaluation respectively. However, Donabedian notes that process evaluation is directed towards assessing participant benefit while outcome evaluation addresses program utility. The exclusion of process from outcome evaluation can lead to dangerously sterile results (Bloch, 1975) so both process and outcome evaluation should be addressed. However, given the institutional needs for this study, emphasis was placed on outcome measures.

The concepts of structure, process and outcome related to nursing may be generalized to the educational setting. Structure remains constant whether nursing care or educational preparation is considered. Process, usually related to actual nursing care, could be extended to include education activities. Instead of the end results of nursing care, outcomes could be the end results of education programs and might include knowledge and/or competency.

There is a growing demand for accountability in health services. If nursing practice is to develop Wright (1984) notes that we must monitor care and act upon both positive and negative findings. Nurse educators should monitor their contribution in terms of educational requirements and student performance. Nursing care is based upon nursing education and may be enhanced or obstructed by factors in the work setting (Bredenburg, 1979). Therefore, this sense of accountability must be fostered not only by practitioners but by educators and administrators as well.

Evaluation of the CCOP was considered essential given the extensive costs and the demand for accountability. Ideally, evaluation should be conducted by an experienced external reviewer but because this was not possible a compromise was reached. There were no funds for external review and no trained personnel within the institution available to undertake an evaluation. The need to conduct an evaluation and the search for a suitable thesis topic coincided and resulted in the program instructor also being the researcher. There were several benefits to this arrangement. First and foremost this arrangement was the only way any formal evaluation would be realized. The efforts of the novice researcher were supported by the thesis committee and led to an evaluation that had the benefit of expert advice. The researcher was already familiar with the course content and also had experience in critical care nursing and education in other institutions. These benefits were balanced against the potential conflict between the roles of instructor and researcher. A consistent effort was made throughout the study to clearly identify the researcher's biases but this limitation does exist. Having established the need for evaluation, selection of a model was a more cumbersome but no less important task. A model should provide direction, set parameters, ensure a systematic approach, and specify relationships (Ediger, Snyder & Corcoran, 1983). Rather than using a model as a fixed set of rules, a model may be used to guide research to support decision making which is the ultimate goal of evaluation. Evaluation may, therefore, be viewed as a process to facilitate judgement rather than an end in itself.

Prior to this study, the CCOP had been evaluated using first and second level evaluation tools (Young & Willie, 1984) and the validity and reliability of these tools were not established. There was no formal measurement of clinical practice which is the ultimate goal of the program. Retention of staff and enhanced quality of care are of secondary importance when compared to the issue of safe competent clinical critical care nursing.

Performance Standards

The identification of competent practice requires articulation of performance standards. Performance standards may represent minimal, acceptable or optimal levels of nursing performance (Berkowitz, 1980). The American Association of

Critical Care Nurses (AACN) has established Standards for Nursing Care of the Critically Ill (Brue & Turzan, 1981, Disch, 1980, Miaskowski, 1982; Wetmer, 1981). The Canadian Association of Critical Care Nurses (CACCN) has begun developing similar standards (Whiteley, 1986). Both the AACN and CACCN standards facilitate and promote optimal achievable critical care nursing practice rather than representing basic standards.

Basic standards define safe practice and guide the orientation of nurses. These standards should be grounded in the application of basic critical care knowledge in the practice setting and are therefore essential. There has been some emphasis on orientation and the development of beginning competence in the nurse new to critical care nursing (Alspach, 1984; Canfield, 1981, 1982; Feeney & Benson-Landau, 1987). One ambitious study reviewed the expected and actual outcomes for 5,030 patients in 19 intensive care units (ICU) in the United States and noted the existence of some type of formal program for the education of intensive care nurses (Draper, 1987). In this study, problems in the management of patients on ventilators and for patients receiving vasoactive drugs were attributed to a lack of emphasis on nursing education. In addition, job dissatisfaction was reported by inadequately prepared new nurses who were overwhelmed by their ICU responsiblities (Draper, 1987). However, development of basic standards has only begun and is frustratingly slow.

Canfield (1982) identified a major discrepancy between nursing educators and administrators concerning which clinical competencies are essential for beginning practitioners. Toth and Ritchey (1984) have attempted to resolve this discrepancy by developing the Basic Knowledge Assessment Tool (BKAT). Since basic knowledge in critical care nursing may be viewed as a precondition to safe clinical practice, identification of this basic knowledge is an essential step in setting basic standards for independent nursing practice. The only other study relevant to basic standards is an analysis of bedside nursing activity in an adult cardiovascular intensive care unit (Crew, Stoodley, Old, Unsworth & Thompson, 1987a, 1987b).

It is not sufficient to only evaluate whether goals and objectives are met (Waltz & Bond, 1985). "Ideally, evaluation in nursing education should consider inputs, processes, outcomes, and interrelatioships between the three and their interactions with the environment in which they occur" (Waltz & Bond, 1985, p. 258). This position is easily incorporated within Stufflebeam's CIPP model.

Survey Methods

Woodward, Chambers and Smith (1982) have succinctly evaluated potential survey methods. In addition, Leonard (1986) has summarized the most commonly used methods for follow-up studies based on her review of Backstrom and Hursh (1963), Oppenheim

(1966), Warwick and Lininger (1975), and Wentling and Lawson (1975). Table 2 presents the summary and ratings of methods of follow-up studies compiled by Leonard (1986, p. 23).

The Research Questions

While data for administrative decision makers is important it is also prudent to collect data for educational adminstrators. Using Stufflebeam's model, the focus of this study was product evaluation. The purpose of product evaluation is to measure and interpret attainments not only at the end but at any point during a program. The general method of product evaluation includes devising operational definitions of objectives, measuring criteria associated with the objectives, comparing these measurements with predetermined absolute or relative standards, and making rational interpretations of the outcomes. Product evaluation provides information for decisions to continue, terminate, modify or refocus the product or program (Stufflebeam, 1971).

Based upon criteria for judging evaluation (see Table 1), answers to the following panoramic questions were sought:

1. What type of nurse participates in the intensive care program?

2. Do particular characteristics correlate with success in the academic portion of the program?

3. Do academic success and clinical competence go hand in hand?

Table 2

Summary and Ratings of Methods of Follow-Up Study

The material involved has been removed because of the unavailability of copyright permission.

Leonard, R. (1986). A follow-up study of the graduates from the Fundamentals in Operating Room Nursing Program. Unpublished master's thesis, University of Alberta, Edmonton, AB.

4. Do less competent nurses leave the intensive care units at a different rate than more competent nurses?

5. Do nurses at similar levels of clinical experience after the program (e.g., 6, 9 or 12 months) have common strengths and/or weaknesses?

6. Does the type of intensive care unit influence the graduate or supervisor ratings?

7. Do the graduate and supervisor ratings substantiate or contradict each other?

Summary

Evaluation may be viewed as a process to facilitate decision making rather than as an end in itself. A model guides research that supports the decision making. Stufflebeam's (1971) model provides this guidance and permits both formative and summative evaluation. Application of the structure to guide an evaluation (see Table 3) necessitates a critical and deliberate formulation of the design, implementation, analyses, and reporting of the findings.

It appears that evaluation is not always seen as the logical conclusion of program development. However, given the increasing demand for accountability in expenditures of health care dollars, evaluation is becoming an economic necessity as well as an educational ideal. Therefore, evaluation of the CCOP was both a desirable and necessary undertaking. Recommendations should

Table 3

Developing an Evaluation

A. Focusing the Evaluation

1. Identify the major level(s) of decision-making to be served (e.g., local, state or national)
2. For each level of decision-making, project the decision situations to be served and describe each one in terms of its locus, focus, criticality, timing, and composition of alternatives.
3. Define criteria for each decision situation by specifying variables for measurement and standards for use in the judgement of alternatives.
4. Define policies within which the evaluator must operate.

B. Collection of Information

1. Specify the sources of the information to be collected.
2. Specify the instruments and methods for collecting the needed information.
3. Specify the sampling procedure to be employed.
4. Specify the conditions and schedule for information collection.

C. Organization of Information

1. Provide a format for the information which is to be collected.
2. Designate a means for performing the analysis.

D. Analysis of Information

1. Select the analytical procedures to be employed.
2. Designate a means for performing the analysis.

E. Reporting of Information

1. Define the audiences for the evaluation reports.
2. Specify means for providing information to the audiences.
3. Specify the format for evaluation reports and/or reporting sessions.
4. Schedule the reporting of information.

8

Table 3 (continued)

F. Administration of the Evaluation

1. Summarize the evaluation schedule.
2. Define staff and resource requirements and plans for meeting these requirements.
3. Specify means for meeting policy requirements for conduct of the evaluation.
4. Evaluate the potential of the evaluation design for providing information which is valid, reliable, credible, timely, and pervasive.
5. Specify and schedule means for periodic updating of the evaluation design.
6. Provide a budget for the total evaluation program.

Adapted from Stufflebeam, D. L. (1971). Educational evaluation and decision-making. Itasco, IL: Peacock.

include a method of establishing periodic formal review if the program continues.

CHAPTER II

METHOD

Application of Stufflebeam's Model

Regardless of the type of evaluation being undertaken, evaluation should follow a logical structure. In selecting a model for CCOP evaluation, no one model was clearly superior. Stufflebeam's Decision Making Model (1971) was selected for several pragmatic reasons. The most practical consideration was that the model parallels the nursing process (Leonard, 1986; Luker, 1981). The nursing process is a problem solving approach to patient care that is familiar to the intended audience of nurse educators and administrators. The model also promotes continuous feedback, recognizes contextual factors and permits decision making at any time which makes this model suitable for ongoing formative evaluation as well as summative evaluation. Depending upon the variables identified and the data collected, Stufflebeam's model may include all levels of evaluation from participant satisfaction to patient health outcomes (Young & Willie, 1984). Therefore, this model provides direction for evaluation with the flexibility to meet the diverse objectives for this program evaluation. Stufflebeam's (1971) suggested structure (see Table 3) has been used to apply the model within the context of product evaluation.

Since the CCOP was already established and no preprogram data were available, research alternatives were limited. Cost, time, personnel, and field setting restrictions, as well as ethical guidelines, further restricted research alternatives.

A follow-up study using a mail survey was most viable given the restrictions previously identified. The results of a follow-up may range from a simple survey of former learners receiving employment to an intensive study of the appropriateness of preparation and an exhaustive evaluation of the program (Wentling & Lawson, 1975).

The decision to include immediate supervisors in a second questionnaire was made for three reasons. First, the self-evaluation by the graduates was subject to questionnaire interpretation and subject response biases (Alwin, 1977; Christensen, 1985; Porter & Chibucos, 1975). Matching supervisor and graduate ratings would permit analysis of these two perspectives. Second, the supervisor follow-up was incorporated by Leonard (1986). Replicating this format may help lead others to evolve a design for follow-up evaluation of other post graduate programs including operating room, critical care, advanced obstetrics, orientation, and refresher programs. Third, the immediate supervisors administer the funding for students in the CCOP. The supervisors' perceptions about the effectiveness of the graduates are important data. This information would provide the supervisors and higher level decision makers with a broader evaluation than the informal feedback presently in use. Including a supervisor survey added a positive dimension to this study. Given the costs of the CCOP in a time of health care cost restraint and the persistent need for accountability, the program needed to be formally evaluated.

Focusing the Evaluation

Evaluation of the CCOP will provide information to the instructor who guides program planning. The Director of Cardiopulmonary and Neurosurgical Nursing will be better informed about nurse characteristics associated with competent performance and actual retention patterns of nurses in intensive care areas following program completion. This information may assist with decisions about personnel selection and long-term planning. This study has described the overall product of the program and this information may assist the Director, the Assistant Vice President (Nursing) and, ultimately, the Vice President (Nursing) in critically assessing the worth of the program. These decision situations required a description of program graduates and their nursing practice. Both biographic information and information on clinical performance was collected and summarized. The evaluator obtained the data within the limits prescribed by the Canadian Nurses Association Ethical Guidelines (1983).

The intent of this evaluation was not to reach a final decision regarding the program's viability. Rather, in beginning to assess the competency of the graduates, the focus was on perceived achievements. Decisions about the program must ultimately be made by those with the authority to do so. These decisions will be made within a broader context that includes concerns such as: financial resources, projected staffing needs, mobility among the intensive care units, and enhanced marketability of graduates. This study was limited to the achievements of the graduates and is not intended to identify or describe the complex political environment within which the program exists.

Instrument

The graduate questionnaire (see Appendix D, p. 1-6) was designed to collect profiles of the respondents as well as a self-assessment of clinical skills. The format and content for the profile section was largely modelled after Leonard's (1986) work and included biographic, educational, pre-program employment, influencing factors and post-program employment data. This approach was deliberately selected to permit possible future analysis that would combine Leonard's data with this study.

The clinical profile section (see Appendix D, p. 7-14) was based upon a review of the literature related to standards of critical care nursing that have been discussed in Chapter I. The major stumbling block to developing the clinical competency tool was identifying minimal levels of competency in crucial skills rather than the ideal standards for desirable skills that were prevalent in the limited literature available. A review of critical care journals and textbooks was also undertaken to attempt to identify the essential skills and behaviors. This review resulted in a formidable list of skills and behaviors which were arranged under the medical systems model. This model is prevalent in both medical and nursing critical care literature and is familiar to program graduates because it is used in the CCOP. The categories of the model include: central nervous, cardiovascular, respiratory, gastrointestinal, genitourinary, musculoskeletal, and psychosocial systems. The skills and behaviors within these systems were then reviewed and refined by clinicians, educators and administrators from several major Canadian hospitals. The refined lists were taken to the former instructor of the program for final face validation. The supervisor questionnaire was based upon the same list but the profile section was omitted.

Both questionnaires were piloted. The graduate questionnaire was completed by 14 staff nurses who worked in other intensive care units in the city. Eleven had a diploma and three had a Bachelor of Nursing Science degree. Their nursing experience ranged from one to nine years with a mean of 3.4 years. The supervisor questionnaire was reviewed by two head nurses, four clinical instructors and two graduate students. Feedback and results were used to enhance the quality of the questionnaires. In particular, alternate trade names of products were incorporated and methods for weighting sets of variables and different systems within the medical systems model was developed. The weighting system is discussed in detail in Chapter III.

Collection of Information

The complete population of graduates totalled 104 plus one failure and no incomplete performances. Subjects were contacted by mail and asked to complete and return the graduate questionnaire (see Appendix D). At the same time, consent of the graduates to contact their immediate supervisor was solicited in a covering letter. The supervisors were then asked to complete the supervisor questionnaire (see Appendix E).

A reminder (see Appendix F) was sent to the graduates and supervisors the third week following the initial mailout with only three responses being received. A second reminder (see Appendix G) was sent the fifth week with two questionnaires being returned.

Organization of Information

Data was paired and encoded numerically on data sheets for analysis using the Statistical Package for the Social Sciences (SPSSx) (Norusis, 1986). All questionnaires were identified and matched only by case number.

Analysis of Information

The level of measurement for descriptive demographic data such as gender is nominal. Data related to performance collected by a Likert scale are interval. Other data, such as age and amount of experience, are ratio.

Data were reported by frequency and percentage distribution. Differences in self reports about performance among the graduates, among supervisors' reports, and between graduate and supervisors ratings were evaluated by Chi-square analyses. Some data were collapsed into categories to facilitate analysis and limit the number of cells. Data were collapsed based upon range and median points. Pearson's product moment correlation coefficient and analysis of covariance were also employed.

Reporting of Information

This study was directed to three distinct audiences: the thesis committee, the nursing executive of the UAH, and fellow nurse educators concerned with implementing formal evaluation of existing programs. Provision of copies of the thesis to the committee and the libraries of the Alberta Association of Registered Nurses, the University of Alberta and the UAH will provide information to these audiences. In addition, an abbreviated report will be submitted to the nursing executive of the UAH.

Administration of the Evaluation

A critical path depicts the evaluation schedule (see Figure 1). In addition to the principal investigator, a volunteer research assistant and the thesis committee were appointed. The evaluation was conducted as directed by the thesis and ethical review committees.

This retrospective survey provided data within the constraints of a field setting and a pre-existing program. Selection of a research design was limited because there was no comparable group to act as a 'no treatment' control group (Christensen, 1985). Also, there were no pre-measures available since formal evaluation had not been planned prior to the initiation of the program. Therefore, two strong design alternatives, comparative and pre-test post-test, were not possible. The costs incurred were paid by the principal investigator and included word processing, binding, computer analyses, stationery, and postage.

Variables of Interest

The identification of variables to be included in the questionnaires was based upon the review of the literature, consultation with nurse managers and educators, and the CCOP outline.

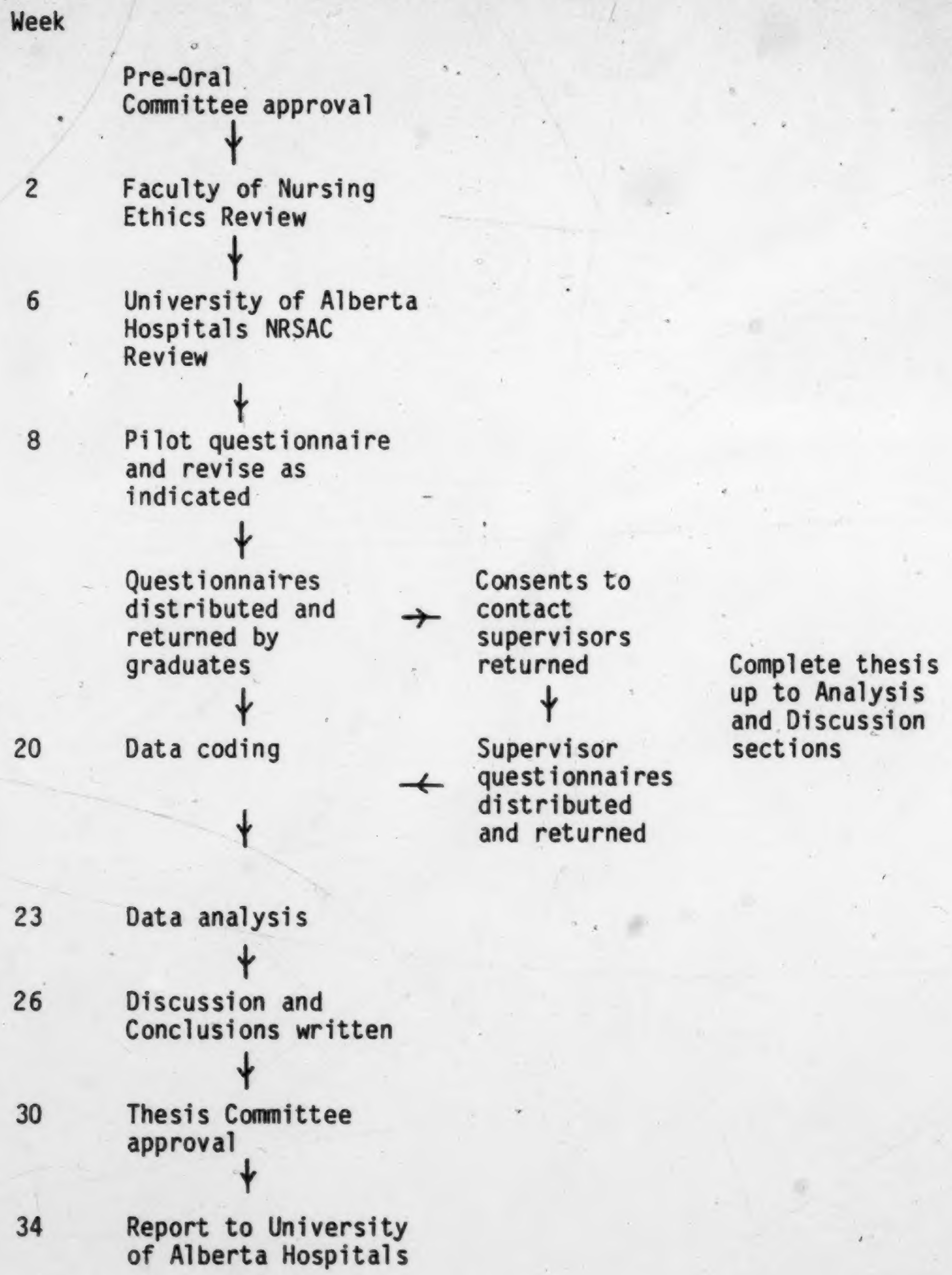
Week
Pre-Oral Committee approval
2
Faculty of Nursing Ethics Review
6
University of Alberta Hospitals NRSAC Review
8
Pilot questionnaire and revise as indicated
Questionnaires distributed and returned by graduates
Consents to contact supervisors returned
Complete thesis up to Analysis and Discussion sections
20
Data coding
Supervisor questionnaires distributed and returned
23
Data analysis
26
Discussion and Conclusions written
30
Thesis Committee approval
34
Report to University of Alberta Hospitals

Figure Caption

Figure 1. Critical path.

The Graduate Questionnaire

Selection of biographic variables was generally based upon review of previous studies (Elliott, 1982; Elliott & Field, 1983; Field, 1978; Hayter, 1963, 1971, 1978; Houser, 1977; Toth & Ritchey, 1984) and in particular upon Leonard (1986). Biographic variables included: place of residency, age, gender, marital status, and dependents. Several education variables were identified and included: year of high school graduation, type and length of basic nursing program, year of nursing graduation, and extent of critical care experience in the nursing education program. Date of CCOP identified which one of two instructors taught the program. Possible differences in program effectiveness due to potential variance between instructors was addressed by treating instructor as a separate variable for analysis in relation to course grades and self-rating of clinical skills. 'Pre-program employment' investigated amount and type of nursing experience, and level of position held.

Selection of practice variables resulted from review of the literature and consultation with nurse managers and educators. The Skills Checklist (see Appendix C) also provided some impetus to direct selection of variables common to the cardiovascular, coronary care, general systems, and neurosurgical intensive care units.

The Supervisor Questionnaire

The supervisors were asked to rate the graduates on the same practice variables identified in the graduate questionnaire. Some biographic data related to the graduates was obtained from their supervisors and included area and length of employment. Another potential variable identified was differences between supervisors' ratings because of the possibility that a supervisor might have an evaluation bias such as overrating. Supervisor would have been treated as a separate variable for analysis if sufficient data had been gathered.

Ethical Considerations

Ethical approval for the study was obtained from the Faculty of Nursing, University of Alberta and the University of Alberta Hospitals. All graduates and supervisors received a package that included a letter of information that reviewed their rights as subjects (see Appendices D and E). In particular, the right to chose whether to participate was addressed. They were also informed that responses would be anonymous and kept confidential and that they were free from harm or coercion. An informed consent was required if supervisors were to be contacted.

The graduate and supervisor questionnaires were paired by case and numbered by an assistant who was not affiliated with the institution. All questionnaires were identified only in this manner to ensure anonymity. The anonymity of respondents was further ensured in the final report by using pooled data rather than individual information. Any publications, excluding the thesis, will be submitted for agency approval if the agency is identified.

Summary

Stufflebeam's model and suggested structure (see Table 3) provided direction for the development of a product evaluation for the CCOP. One step of the process related to the collection of information necessitated the formulation of the graduate and supervisor questionnaires (see Appendices D and E). Biographic variables were readily identified in the literature. However, the identification of practice variables relied more heavily upon consultation because of the relative scarcity of literature relevant to the critical care setting.

CHAPTER III

ANALYSIS AND RESULTS

Critical Care Orientation Program (CCOP) graduates were contacted by mail using last known addresses from the Department of Human Resources, University of Alberta Hospitals. Each of the 104 graduates received a covering letter, questionnaire, consent form to contact their immediate supervisor, and stamped addressed envelope for returning completed material.

Initially 12 questionnaires were returned by Canada Post with incorrect addresses but only four could not be correctly redirected. Reminders were sent at three and five weeks following the initial mailing. The response rate was 43 out of the possible 104 questionnaires mailed. Thirty of the 43 subjects who returned the questionnaire gave consent to contact their supervisors.

The response to the survey was lower than anticipated. A review of the surveys of other program graduates (Elliott, 1982; Elliott & Field, 1983; Field, 1978; Leonard, 1986) supported the expectation of a response rate exceeding 60%. However, the actual response rate was only 41%. One explanation for the difference in response rates between the current survey and the other studies may be a difference in the types of students. Elliott, Field and Leonard surveyed students from formal education programs who had voluntarily paid tuition fees and received no salary during the courses. CCOP graduates did not voluntarily register for the course, pay fees, or forgo salaries. Since the program is a requirement for employment, the CCOP graduates could be considered to be conscripted. Fifty-one percent of the respondents first heard of the program during their employment interview which supports the view that the CCOP graduates were not primarily seeking an educational opportunity whereas those studied by Elliott, Field and Leonard were. The choice of an educational opportunity has not been restricted by availability. Preparation in critical care practice may be obtained in one of several Canadian post graduate programs. Such a program is offered in Edmonton jointly by the Faculty of Nursing, University of Alberta and the Misericordia Hospital. Therefore, there are voluntary programs in critical care and at least one is easily accessible. The fact that only 11 CCOP graduates had completed such a program further strengthens the assertion that the nurses primarily selected the employment opportunity and accepted the CCOP as a requirement for employment. It may be that some nurses chose the employment, at least in part, because of the extensive paid orientation and this should be investigated to assist administrators in identifying factors that attract new staff.

Other factors may have also influenced the response rate. The questionnaire was extensive and consisted of 14 pages. The anticipated time to complete the questionnaire was mentioned in the covering letter and was based upon the pilot that demonstrated the average response time to be about 20 minutes. However, the length may have discouraged some nurses. Should the questionnaire be used again, it would seem advisable to shorten it and perhaps provide time during work hours or prior to the exit interview to increase completion rates.

It is also possible that some non-respondents perceived the evaluation to be threatening particularly if they did not understand or believe that the research assistant insured their anonymity from the principal investigator or other employees of the institution. It was anticipated that subjects would generally not be in favor of having their supervisors evaluate them and that such consent would be very limited. Leonard (1986) reported that 20 of the 60 (33.0%) Fundamentals in Operating Room Nursing Program respondents gave consent to contact their immediate supervisor for evaluation. In contrast, 30 of the 43 (69.7%) CCOP respondents gave consent. This increase in consent may be attributed to a belief on the part of the respondents that the data would be kept confidential or perhaps that these supervisors were considered to be fair. Also, mandatory evaluations might persuade graduates that the results of evaluation were already known to them and would substantiate their own self-reports. This unexpected and positive response was unfortunately overshadowed by the poor response from the four supervisors with only five of the

30 ratings being returned. Leonard contacted a total of 12 supervisors and all responded.

It is also worthwhile to note that Leonard did not include a 'blind' research assistant and her second follow-up was made by telephone rather than mail. The more personal telephone contact may enhance return rates and should be considered in future studies if ethical considerations and costs can be satisfied.

Research Question One: Characteristics of Respondents

In the first section of the questionnaire (see Appendix D, Questions 1-28) biographic data was obtained based upon content and format designed by Leonard (1985). This replication was intentional to permit future analysis of the two data pools. These data primarily addressed Research Question One: What type of nurse participates in the intensive care program?

Thirty-one of the 43 respondents (72.1%) lived in a metropolitan area immediately prior to commencement of CCOP (Question 2) and 35 (81.4%) currently reside in Edmonton (Question 3). All respondents are female (Question 5). Tables 4 through 6 summarize the distribution of the sample in terms of age (Question 4), marital status (Question 6) and dependents (Question 7). The majority of the sample were single, less than 30 years of age and had no dependents when they were in the CCOP.

Table 4

Age Distribution of the Sample

Value in Years	Frequency	Percent
20 - 24	15	34.9
25 - 29	17	39.5
30 - 34	5	11.6
35 - 39	3	7.0
Over 40	2	4.7
Missing	1	2.3
Total	43	100.0

Table 5

Marital Status

Status	Frequency	Percent
Single	20	46.5
Married	18	41.9
Common Law	3	7.0
Divorced	2	4.6
Total	43	100.0

Table 6

Dependents

Number of Children	Frequency	Percent
None	34	79.1
One	2	4.7
Two	6	14.0
Three or More	1	2.3
Total	43	100.1

Educational Profile

The majority of the subjects in the sample were prepared in two year hospital based training programs (Question 10), had graduated since 1980 or later (Question 11) and had no further educational preparation since graduation (Question 14). Tables 7 through 9 summarize the distribution of the subjects on these educational variables.

Critical Care Orientation Program

There was no significant relationship between subjects who responded to the survey and those who did not with respect to the date of the CCOP session (Chi-square=10.78, df=7, $p<0.5$). Table 10 indicates the distribution of the sample for these variables.

In order to assess the representativeness of the sample in terms of grade achieved in the program, an analysis was conducted to determine if there was a relationship between course grades and sessions of the program (Question 16). A Chi-square test of independence was conducted. Grades were collapsed into two categories (low and high) to limit the number of cells (Table 11). The results were non-significant (Chi-square=10.78, df=7, $p<.15$). A Yates Correction was employed in the SPSSx Statistical Package to offset the effect of small numbers in the cells (Norusis, 1983).

The consistency of response rate and grades fails to support the rival hypotheses that a statistically significant relationship

Table 7

Type of Nursing Education Program

Type of Program	Frequency	Percent
Hospital Based	23	53.48
College	14	32.56
University	4	9.30
Other (Graduate)	2	4.65
Total	43	99.99

Table 8

Length of Nursing Education

Length in Months	Frequency	Percent
20	1	2.3
20 - 24	16	37.2
25 - 29	9	20.9
30 - 34	10	23.3
35 - 39	5	11.6
40 - 44	1	2.3
Over 44	1	2.3
Total	43	99.9

Table 9

Year of Nursing Graduation

Year of Graduation	Frequency	Percent
1965 - 1969	2	4.7
1970 - 1974	2	4.7
1975 - 1979	5	11.6
1980 - 1984	25	58.1
After 1984	8	18.6
Missing	1	2.3
Total	43	100.0

Table 10

Response by CCOP Session

	CCOP Session								
Grade	1	2	3	4	5	6	7	8	Total
Respondents	5	2	9	7	6	3	2	8	42
Non-Respondents	3	8	15	14	12	2	2	6	62
Total	8	10	24	21	18	5	4	14	104

Chi-square=6.825, df=7, p<.5

Table 11

CCOP Grade Achieved by Session

	CCOP Session								
Grade	1	2	3	4	5	6	7	8	Total
Low	3	0	4	3	6	1	0	4	21
High	2	2	5	4	0	2	2	4	21
Total	5	2	9	7	6	3	2	8	42

Chi-square=10.78, df=7, p<.15

existed in relation to date of CCOP session. If there was no such relationship between the grades and date of the session then one may deduce that there was no tendency for some sessions to have disproportionately distributed grades. Different instructors had been initially identified as a potential extraneous variable. Because one instructor taught the first three sessions and another instructor taught the remainder, there was a possibility that the different instructors might influence the grades of their sessions. For example, one instructor might have more effective teaching methods in relation to the grades achieved or might mark differently. There was some effort to control this variation by having the initial instructor train the successor and jointly mark one set of exams to promote consistency but these were relatively crude controls. It was also possible that relatively more graduates from the later sessions might respond because they wanted to 'help' their former instructor who was also the researcher. However, the analyses indicated that there was no statistically significant relationship between sessions in relation to response or grades so it is unlikely the different instructor was a significant extraneous variable.

The average grade achieved by the population of all the graduates (n=104) obtained from the course register was 85.1% while the average reported grade of the sample (n=43) was 84.55%. Statistical analysis was not possible because some of the population data was only available as means which prohibited calculation of standard deviation. The difference in the means of approximately 0.6% would strongly suggest that no difference in mean academic performance existed. In Question 16, respondents were requested to report their course grades in five percent ranges which would have further complicated comparison. Careful record keeping of raw data has been instituted and should be maintained to insure such data is not lost in the future. Also, the format of the question about grades should be restructured to elicit interval level data if the questionnaire is used again.

The only other data available to describe the population was placement in an intensive care unit immediately following graduation which was obtained from the course register. This population data was compared with the sample data obtained in Question 25 and presented in Tables 12 and 13. The distribution of respondents with respect to the type of intensive care unit following completion of the CCOP is tabulated in Table 12. A Chi-square test of independence for this table indicated that there was no significant relationship between the intensive care unit to which graduates went and whether or not they responded to the questionnaire (Chi-square=6.885, df=3, $p<0.1$).

Therefore, the sample appeared to be similar to the population of the 104 graduates on academic grades and distribution by intensive care unit. There does not appear to be

Table 12

Participation by Intensive Care Unit

	Type of Unit			
	General	CV Surgery	Neurosurgery	Cardiac
Respondents	13	8	12	8
Non-Respondents	18	27	11	7
Total	31	35	23	15

Chi-square=6.885, df=3, p<.1

Table 13

Assigned Unit Following CCOP Graduation

	Respondents		All Graduates	
ICU Type	Frequency	Percent	Frequency	Percent
General	13	30.2	31	29.8
Cardiovascular	8	18.6	35	33.6
Neurosurgical	12	27.9	23	22.1
Coronary	8	18.6	15	14.4
Total	41	95.3	104	99.9

a bias that the respondents were distributed by CCOP session any differently than the distribution of all graduates.

Summary

The data describing program graduates relied upon the representativeness of the sample. The composite description of the respondent was a female, under 30 years of age with no dependents who had completed a nursing diploma since 1980 and had not participated in any other formal education. The average course grade of the population and the distribution of staff among the intensive care units was among the limited data available for comparing the similarity of the sample to the population of interest. The sample and population had similar course grade means but statistical analysis was not possible to support this finding. The sample and population did share similar distributions for employment in intensive care units after graduation. This small non-random sample of respondents may have limited generalizability, although they appeared to be unbiased relative to academic grades, ICU and CCOP session.

Research Question Two: Academic Success

The second research question addressed the potential relationship between personal characteristics and academic success. In particular the possible effect of educational preparation (Question 10) upon academic success as measured by the course grade (Question 16) was investigated. No statistically significant differences were detected for this data as presented in Table 14 (Chi-square=9.54, df=12, p<.66). A Chi-square was also performed on the data presented in Table 14 but education was collapsed into two categories (degree and diploma) and grades were collapsed into three categories (low, medium and high) with no significant results (Chi-square=3.67, df=4, p<.45). Thirty-seven respondents held diplomas while six held degrees. However, with the very small size of the baccalaureate group there would have had to be a large difference before significance could be demonstrated.

Research Question Three: Academic Success and Self Rating

The third research question was designed to explore any relationship between academic success as measured by the course grade (Question 16) and clinical competence as measured by the self rating of clinical competency score.

Self Rating of Clinical Competency

The calculation of the overall score of the self rating was obtained using data from the clinical profile portion of the survey and the calculation was done in three steps. The first step required grouping some responses and taking means to insure that the more specific skills did not accumulate undue weight in relation to all the skills under a particular subheading. For example, the self ratings for auscultation of four abnormal heart sounds were summed and its mean included in the total score for

Table 14

Relationship Between Educational Preparation and Academic Success

Academic Grade	Education Hospital	 College	 University	Total
65 - 69	1	0	0	1
70 - 74	1	0	0	1
75 - 79	2	3	1	6
80 - 84	7	5	1	13
85 - 89	8	1	3	12
90 - 94	4	4	1	9
95 - 100	0	1	0	1
Total	23	14	6	43

Chi-square=9.54, df=12, p<.66

the cardiovascular section. The ratings for specific abnormal heart sounds will be useful in assessing educational needs and potential weaknesses within the current curriculum. However, it was not appropriate to weight normal heart sounds which is the key skill with only one item and the differentiation of abnormal heart sounds with four items. Therefore, means were used for some items under subheadings. Table 15 depicts the subheadings that were created by grouping the items listed after each subheading and taking their mean.

The second step for calculating the overall self rating score summed the ratings under each subheading and created four major categories which were converted to percentages. These categories included neurology, cardiovascular and respiratory systems. The remaining systems were combined to form the category referred to as 'other'. These major categories were formed based upon the distribution of teaching time within the program and the coverage of these areas within critical care texts as well as consultation with critical care nurse educators. The range of scores for the categories were from 35 to 100% and mean percentages for each category are reported in Table 17.

The third and final step assigned weighted values as noted in Table 16 to each of the four major categories. These weighted scores were multiplied by the category scores. The category sums

Table 15

Subheadings Formed by Grouping Items

Subheading	Items
Abnormal Heart Sounds	S3, S4, murmur, rub
Blood Pressure Monitoring	Palpation, dynamap, arterial line
Electrocardiogram	
Sinus Rhythms	Normal sinus rhythm, sinus bradycardia and tachcycardia
Junctional Rhythms	Premature atrial contractions, junctional rhythm, accelerated junctional rhythm, premature junctional contractions
Conduction Blocks	1st degree, 2nd degree, type 1 and 2, and 3rd degree
Ventricular Rhythms	Ventricular tachycardia, ventricular fibrillation, idioventricular rhythm, premature ventricular contractions, asystole, electromechanical disassociation
Abnormal Air Entry	Crackles, wheezes

Table 15 (continued)

Subheading	Items
Abdominal Drains	G, J and D tubes
Ostomies	Ileostomy, colostomy
Surgical Drains	Blakemore, Penrose, Jackson Pratt, Hemovac, Axiom, Saratoga
Foley Catheter	Insertion, obtaining specimens, pericare
Blood Product Administration	Packed cells, platelets, plasma, albumin
Cardiac Drugs	Dopamine, dobutrex, sodium nitroprusside, nitroglycerine
Antiarrhythmic Drugs	Antiarrhythmics, lidocaine
Insulin and Heparin Drips	Insulin, heparin
Pin Care	Gardner Wells, halo, Steinman, external fixators

Table 16

Weight Assigned to Major Systems

System	Weight
Neurology	.15
Cardiovascular	.35
Respiratory	.25
Other	.25
Total	1.00

Table 17

Clinical Competency Mean Percentages of Weighted Scores by Major Systems

System	Mean Percentage
Neurology	79.7
Cardiovascular	73.9
Respiratory	90.1
Other	85.9
Combined Clinical Competency Score	81.8

were then totalled to arrive at the combined clinical competency score as reported in Table 17.

Grade and Clinical Competency

In order to examine the question of relationship between course grade and clinical competency, a Pearson product moment correlation coefficient was calculated. The correlation was statistically significant ($r=.26$, $n=43$, $p<.046$). This suggests that it is unlikely that the clinical competency score of the sample came from a population in which the correlation was zero. While statistically significant, this finding has limited practical application for two reasons. First, academic success primarily assesses the cognitive domain while the clinical competency score focuses on the psychomotor domain. Clinical skills may be performed without extensive cognitive preparation as is the case in shorter orientation programs that focus on the acquisition of skills. While quicker and less expensive initially, the benefit of a skill-focused orientation must be weighed against the more amorphous benefits of practitioners with broader cognitive bases and advanced problem solving abilities. The actual merits are beyond the scope of this discussion but may be considered within Stufflebeam's (1971) framework for contextual evaluation. The second reason that this statistically significant result has limited application is that the actual correlation is low and predictability is therefore limited. However, there was a tendency for those doing well in the course to also do well on the clinical competency score.

Research Question Four: Differential Attrition Rates

The possibility that attrition rates might be influenced by clinical competency scores was addressed in Question 4. It was possible that those with relatively low clinical competency scores as determined by their self ratings would be more dissatisfied and more likely to leave the intensive care setting (Questions 26 - 28). Thirty-seven of the respondents were in the same ICU they had gone to following CCOP completion and two were in other ICUs within the same institution. Only four respondents were no longer employed in the institution. Since, the turnover rate for CCOP graduates has been estimated by the Director of Nursing to be over 30% in an informal survey, it appears that the sample is not very representative of the total CCOP graduate population. Chi-square analysis determined there was no significant relationship between current employment status and academic success as measured by course grade collapsed into low and high categories (Chi-square=2.22, df=2, $p<.33$). Given the small cell size for graduates no longer employed within the institution, as noted in Table 18, findings would have been suspect in relation to representativeness. The implications of lost data from graduates who have departed is more thoroughly discussed in Chapter IV.

Table 18

Current Employment in Relation to Academic Success

	Current Employment			
Academic Grade	UAH ICU	Other ICU	Other Nursing	Total
Low	17	2	1	20
High	20	0	1	21
Total	37	2	2	41

Chi-square=2.22, df=2, p<.33

Research Question Five: Clinical Competency and Experience

Clinical competency score was examined in relation to the effect of critical care experience following the program (Question 15). The possible effect of experience impacting upon the self report clinical competency score was addressed. There appears to be a popular belief among staff, educators and administrators that critical care nurses become competent with about one year of critical care clinical experience. It seemed possible that ratings would increase as experience and familiarity increased. Chi-square analysis was conducted and the two variables, clinical competency and critical care experience, were found to be independent of each other (Chi-square=.78, df=7, p<.99). An additional Chi-square analysis was attempted and amount of experience since graduation was collapsed into three categories which consisted of less than one year, one to one and one-half years, and more than one and one-half years while score was subdivided into low, medium and high (see Table 19). This analysis yielded similar non-significant results (Chi-square=8, df=4, p<.94). Therefore, the popular belief that experience is related to increased competency was not supported by the self reports in this study.

Research Question Six: Influence of Different ICUs

The influence of different ICUs (Question 25) upon graduate and supervisor ratings was considered as a potential confounding

Table 19

Critical Care Experience and Clinical Competency Score

	Critical Care Experience			
Clinical Score	>1 Year	1-1.5 Years	>1.5 years	Total
Low	2	2	5	9
Medium	5	3	11	19
High	3	4	7	14
Total	10	9	23	42

Chi-square=8, df=4, p<.94

variable and was therefore measured in Question 6. A test of independence between intensive care unit following graduation and clinical competency categorized as low and high was conducted using a Chi-square. The non-significant results (Chi-square=3.89, df=3, p<.27) indicated no relationship between these two variables (see Table 20).

Analysis of covariance was also done on the means of the clinical competency scores for the four units with a covariate or statistical control using the amount of experience since graduation. The results were non-significant (F=1.878, df=3.36, p<.151). Thus, it was concluded that clinical competency scores did not differ among the subjects of different units when adjusted for experience.

Supervisor ratings were not analyzed due to the insufficient sample size of five cases.

Research Question Seven: Graduate and Supervisor Ratings

Supervisor ratings had been incorporated to strengthen the self report data. However, due to insufficient supervisor returns no analysis was deemed appropriate to determine consistency between graduate and supervisor ratings. Future research that captures supervisor ratings would be beneficial to support self reports if no stronger research design alternatives are available at that time. However, the tool would have to be streamlined.

Table 20

Distribution of Clinical Competency Scores by Unit

Clinical Competency Score	Intensive Care Unit				
	Cardiac	CV Surgery	General	Neurosurgery	Total
Low	2	3	7	8	20
High	6	5	6	4	21
Total	8	8	13	12	41

Chi-square=3.89, df=3, p<.27

Asking supervisors to complete many questionnaires in a relatively short period of time is also not advisable.

Open-Ended Responses

In Question 18 the respondents were asked why they left the positions they first held after completion of the CCOP. Three predominant themes emerged. First and most frequently, the work was described as "too stressful" and one respondent made specific reference to the "high patient acuity and general tragedy". A vivid description of this perceived stress was offered by one respondent: "the extent of nursing care needed was numbing". Second, 12 hour shift rotations were described as "very long and physically draining" and one individual noted that shift work made continuing education impossible. The third theme was a lack of friendliness among the staff and a lack of cooperation and teamwork. They further described the ambience as not being conducive to learning.

At the conclusion of the questionnaire respondents were invited to make any comments they wished. The most common comment was the concern that this study account for the fact that they rated themselves more positively as their experience increased (although statistical analysis did not support this view). One individual summarized the predominant sentiment succinctly: "I think the first year is hell for everyone!" Several respondents commented favourably on the instructor's knowledge, preparedness and positive attitude. The program was described as "very full" and "too much in too little time". Positive remarks about the contribution the program made to individual nursing practice were noted. However, one individual stated, "I do not feel that the capabilities of my nursing care are in any way attributable to the program; these skills are the result of hard work and experience". One person astutely noted that the questionnaire did not address "organizational skills which is a reflection of the quality care given". A final comment described the questionnaire as "long and monotonous".

The overall impression from the open-ended comments was that most respondents saw the CCOP as valuable but overwhelming in terms of the amount of content presented. The respondents who had left their first clinical placement after completion of the CCOP consistently described the overwhelming stress of nursing in an intensive care unit. The comments made by those who had left held a pervading sense of being unable to cope. There were no identifiable comments from those who started in one ICU and had moved to another. It would be of interest to determine if the same sense of being overwhelmed followed these individuals or if a change of ICU alleviated this problem.

Summary

The research questions were established based upon a review of the literature and an estimation of sample size. The sample biases identified the scarcity of respondents who had left the institution and the usual limitations of a volunteer non-random method. Due to these identified biases and the relatively low response rate, generalizability is limited. The only statistically significant finding was the small explained variance in clinical competency rating in relation to course grade. Any effort to increase the credibility of self report with supervisor rating was hampered by the inadequate supervisor sample size.

CHAPTER IV

DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS

Program Evaluation Using Stufflebeam's (1971) Model

In Stufflebeam's (1971) evaluation model four types of evaluation are identified: context, input, process, and product. The model used in this study supports any combination of some or all of these types of evaluation. The model has been presented in detail in Chapter I. In relation to the CCOP, product evaluation has been the primary focus of this study and context, input and process evaluations will be discussed as they relate to the CCOP.

Product Evaluation

Product evaluation may be used to measure and interpret attainments at any stage of a program according to Stufflebeam (1971). Decisions may be made to continue, terminate, modify, or refocus a program in this phase. Product evaluation was selected as the major focus of this current study because it was crucial that some formal evaluation was undertaken to assess current salary and administration costs in relation to benefits as well as to direct future development.

Criteria for judging an evaluation have been identified by Stufflebeam (1971) and are summarized in Table 1. Several of these criteria have been selected as appropriate for this assessment and include: internal validity, external validity, reliability, objectivity, relevance, timeliness, and efficiency.

Internal validity is attained when the observed effect is due to experimental treatment and not some other extraneous variable (Christensen, 1985). In this study no experimental treatment was randomly assigned or deliberately manipulated. The survey method was selected because it was a viable method of gathering information. However, evaluation should always be built into any program planning and this anticipatory planning would permit use of stronger research designs. The internal validity of the current study is therefore very weak and not a critical issue because a descriptive survey without random assignment, manipulation or control was employed.

External validity is realized when the results of the sample can be generalized to individuals who did not participate in the study (Christensen, 1985). As discussed in Chapter III, this study relied upon a non-random volunteer sample. Graduates who had left the institution were under-represented in the sample, and the overall sample size was small. Given these limitations, the external validity of the study is severely limited.

Reliability requires a reasonable consistency in results obtained such as in a group of repeated tests. No test-retest methods were employed in this study because of the lack of controls already identified. Reliability and replication are more critical concerns in well controlled experimental studies with established validity. Since the questionnaire was used for the first time in this study and modifications are required, test-retest issues will be a more relevant concern if the tool is used in the future.

Recommendations for the Critical Care Orientation Program are based upon the literature review, results of the survey and 18 months' experience as the program instructor. Objectivity implies freedom from personal feelings, opinions and biases. Given the nature of the tool developed and the relative lack of support from the literature, this study relied upon some personal opinions and biases. Since the program had already been established when the author assumed the position of instructor there was less sense of ownership and resulting bias. The author had also taught critical care as a nursing care coordinator at another large metropolitan hospital and had this experience in another setting to draw upon. Face validity was employed to develop the questionnaire so the opinions and biases of other critical care nurses have also been incorporated. The conclusions may have been influenced by the author's association with the program although a conscientious effort has been made to separate the roles of evaluator and instructor. However, regardless of the author's biases, administrators will make the final decisions.

The relevance of the study is supported in relation to the needs of the patients and the institution for trained critical care nurses. However, the study deliberately focused beyond the basic product of the CCOP which would have relied upon cognitive measures. The choice was made to obtain some measure of the performance of the graduates in the clinical settings which is the ultimate goal of education from the institutional viewpoint. Therefore, this study is highly relevant but this relevancy was obtained under time constraints and at the sacrifice of stronger design alternatives.

This study is undoubtedly timely because external funding sources no longer exist and funding is now dependent upon operating budgets which are likely to be severely limited in this era of health cost containments. Evaluation will provide decision makers with data and recommendations that will assist context evaluation.

The efficiency of the program is difficult to estimate. The ultimate measurement would ideally be patient outcomes but these are difficult to quantify as was discussed in Chapter I. Certainly the costs of the program are significant, and attrition remains a concern. The literature review has supported the importance of a structured orientation program to help insure safe practice and possibly promote retention of trained staff. Johnson (1988) has suggested that intensive care unit (ICU) staff turnover exceeds 50% in the United States. While it does not appear that the Canadian rate has reached such immense proportions, the current UAH turnover rate of CCOP graduates has been reported as about 30% annually based upon an informal survey. The final decision regarding program efficiency will have to be made by administrative decision makers within the framework of context evaluation.

The criteria for judging evaluation has resulted in an assessment that presents at least some aspects of the basic limitations of any survey-type study: sampling error, time constraints and limited survey length (Christensen, 1985). It is always desirable to build in formal evaluation and use a stronger design but the need for a study to begin to evaluate the program outweighed these methodological concerns. Future studies should anticipate the need for formal evaluation and this preplanning will permit selection of stronger research designs while still meeting the more prosaic but urgent needs of the organization.

Context Evaluation

Context evaluation identifies and defines the limits of the domain to be served. The domain to be served by the CCOP strictly focuses upon cognitive attainments but the underlying assumption is that cognitive ability will enhance clinical practice. The ultimate objective of the institution is to provide safe competent care. To meet this objective in relation to the critical care patients, the CCOP was designed and implemented. In order to evaluate the program, unmet needs and unused opportunities must be identified. According to Stufflebeam (1971) a rationale for determination of objectives should be the ultimate goal of this type of evaluation. These broad objectives or goals must be identified and supported by the line of the organization as represented by the administrators before the organizational staff functions supported by educators can be realized. Several concerns have been identified and explored in relation to context evaluation.

Advantages of Employee Retention

Losing trained staff has implications for both educators and administrators. Replacing staff is expensive for administrators and time consuming for educators. Costs include salaries for (a) new staff during the orientation time, (b) the instructors and (c) the relief staff used to meet staffing demands in the interim. Due to the shortage of experienced critical care nurses, replacing lost staff usually requires orientating nurses without ICU experience. Orientation of novice ICU nurses is more time consuming and correspondingly more expensive. It is therefore financially desirable to enhance retention. Staff retention also supports the development of a large pool of experienced nurses. Experienced personnel have been intuitively associated with increased quality of patient care and Draper's (1987) research strongly supports this assertion. Increased levels of retention may be realized by promoting staff satisfaction. Staff retention may also be promoted by limiting job dissatisfiers such as rotations with short changes, inconsistent policies for patient assignment and a perceived lack of support from other disciplines--especially medicine. It has been this author's experience that dissatisfiers are more likely to lead to direct action such as transfers or resignations. The nurse can often return to the more comfortable routine of a prior job with no loss in pay or seniority. Given the present relative shortage of staff, nurses may leave the ICU environment taking the additional knowledge and skills gained in a major acute care centre and find themselves even more marketable. Indeed, the additional knowledge and skills may actually lead to enhanced awareness of abilities and responsibilities and this increased consciousness may lead to satisfaction or dissatisfaction depending upon the individual and the work environment.

Testing

Regardless of the format selected, there are some basic educational concerns to be addressed. Tests should be redesigned to increase their validity and reliability perhaps in conjunction with the development of criterion referenced objectives. The format of testing within the program has relied on multiple choice questions throughout the program until the final examination which has a predominantly short answer format. Some consistency in the testing format throughout the program should be implemented. A combination of multiple choice and short answer formats may be combined to test knowledge and application of course content. The final examination has been worth 60% of the final grade which is a large value resting on only one examination that requires about three and one-half hours to complete in a format not previously used within the course. The final examination primarily tests content with less that 20% of the total mark related to application and integration. From an educational perspective, the end of the program the emphasis should be on integration and application. The final examination should be shorter in length, contribute less to the final grade and focus more on application and integration.

Testing of content could be partially undertaken in a midterm examination. The midterm examination would be an earlier indicator of performance and help test essential content related to the central nervous, cardiovascular and respiratory systems. Application and integration could become the focus of the later part of the program.

Student Responsibility

The program participant should be a more active participant in the learning process. The move toward a more androgogical model requires that individuals accept responsibility for their learning. The role of the educator would be to act as a facilitator and guide for this process. Candidates would have to be more self motivated and directed and these characteristics would have to be considered during the interview process. Completion of a pretest might also be considered as an indicator of participant commitment. To better inform prospective employees of the roles and responsibilities of critical care nurses, an observation time in the intensive care unit should be made available.

Clinical Evaluation

Regardless of performance in the class portion of the program, early clinical experience is essential. Clinical exposure provides students with the opportunity to begin evaluating the setting. Clinical practice also provides administrators and educators with an opportunity to assess the students' basic nursing competencies. Educators may provide planned clinical experience to supplement lecture content. The use of the skill checklist (see Appendix C) could be expanded to include many categories of the clinical competency tool to provide explicit criteria to students, educators and administrators. These categories could be incorporated within the Levels of Practice currently under construction and the clinical competency tool could also be used to guide evaluation.

Ongoing Surveillance

Continued follow-up of graduates is important to assist with ongoing program evaluation and to support administrative decision making. Data from the Quality Assurance Program could be useful to determine patient outcomes which are the ultimate measure of success. Computer programs would have to be designed to access Quality Assurance data such as drug errors, quality of nursing care and patient interviews. Continued follow-up using a modified model of the clinical competencies tool would add data that would be of use to both administrators and educators since data of this nature are not currently available. The modified tool could be incorporated as part of the personnel file if it was used for self-evaluation. Administrators could incorporate it in mandatory evaluations at the end of the probationary period and subsequently on an annual basis. The clinical competencies tool would provide some standardized criteria with a critical care focus and would significantly improve the standard evaluation form which is currently used for all hospital employees from clerks and maintenance staff to nurses.

Turnover should be monitored on an ongoing basis and the Human Resources Department could perform this function. Internal transfers as well as resignations should be recorded, analyzed and routinely reported to administrators. An exit interview should be incorporated as part of the mandatory routine for all nurses leaving the institution. These interviews would be best conducted by the Director of Nursing or designate rather than the immediate nursing unit supervisor. Under these conditions, the nurses might be more forthcoming about problems in the unit or with the immediate supervisor. Employees may be disarmingly frank and perceive themselves to be at no risk because they are leaving for a position elsewhere.

Input Evaluation

The focus of the study was product evaluation but input evaluation should be developed if several of the recommendations are accepted. Stufflebeam (1971) has suggested that input evaluation creates programming decisions by considering program structure, design and resources in relation to objectives. Given the broad objective of adequate care delivered by safe competent staff, the utilization of resources has been considered in terms of students, learning alternatives and institutional contributions.

Student Responsibility

The benefits of an extensive orientation program to the students include improved clinical practice, prestige and an increased demand for their services that is almost independent of the general nursing market. It seems reasonable to expect participants to make some contribution to their learning because the program benefits not only the institution but the nurses personally. However, most nurses in the study have completed highly structured diploma programs and have not engaged in any further continuing education. They appear to be predominantly pedagogical learners rather than the androgogical learners one would expect of members of a profession. This characterization is supported by experience as the program instructor.

Measures to promote a greater sense of responsibility for learning should be considered. The first alternative might be to require students to complete a portion of the program on their own time to insure commitment to the program. Such a requirement would require a feasibility study to consider union contract requirements, potential numbers of registrants and mandatory versus voluntary participation.

Second, the possibility of challenging existing critical care university courses for credit might also be a motivator for some students if this arrangement could be negotiated. This credit could be applied toward a post basic degree in nursing and would also quality staff for the post graduate pay incentive.

Third, completion of a pretest that reviews basic physiology, pathophysiology and drugs could be required before entering a shorter paid orientation program. The shorter program would then focus on issues directly related to critical care and eliminate the substantial amount of time presently spent on review of basic nursing content. This shorter program would be less expensive and build upon motivated learners who had already refreshed their learning skills and basic knowledge.

One major stumbling block to this third option is the often short time period from an offer of employment to the starting date. One alternative might be to offer a shorter skills-focused program that would prepare nurses for the four adult intensive care units. The program might consist of two weeks of class time and two weeks of guided clinical experience. The nurses would then be placed in the clinical setting for three months. During this time the pretests could be completed with access to the libraries and educators within the hospital. If their probationary performance appraisals were satisfactory and the pretests successfully completed, they would then return to the classroom for more advanced critical care nursing preparation. A core of the content for the second class block of two weeks would be designed for all students while some of the class time would be unit specific. This second block of class time could be incorporated with Levels of Practice as a second or third level class time and would be made a condition for continuing employment because several certification skills would be included. Group One would be completing probationary clinical time while Group Two could be starting the first class block. This would place Group Two in the units when the Group One would be returning for the second class black. This type of cross coverage would help insure staff coverage and permit more efficient use of instructor time. There are always different levels of practitioners within the units and this option would meet the demands for clinical experience while also supporting staffing needs.

A fourth alternative would be to lengthen the course into a post graduate course similar to the Fundamentals in Operating Room Nursing Program currently offered at the UAH. The students would pay a fee to register and would be full time unpaid students. Employment would not be guaranteed and students would be free to choose where to work which might not directly help the UAH critical care nursing shortage. Also, graduates of such a program would be slightly more expensive to pay because they would quality for the post graduate pay incentive. Establishment of such a program would require financial and administrative support from the hospital. In addition, given the existence of the Misericordia Hospital program the feasibility of a second specialized critical care program would have to be evaluated.

Process Evaluation

Process evaluation was not the focus of this study or discussion. Periodic feedback to assess the impact of program changes is important and such mechanisms should be developed if changes are made. Even if changes are not instituted continued monitoring is important. The use of a modified clinical competencies tool, skills checklist and exit interview will help provide some important data. Course grades also contribute to the monitoring process as does the instructor's quarterly report and assessment of attrition rates.

Findings and Limitations

Evaluation of the program has been presented within the context of Stufflebeam's (1971) Decision Making Model. Data from the questionnaires has provided both biographic background and clinical competency ratings within the critical care setting. The findings have been amalgamated and limitations addressed in the following section.

Biographic Background of the Sample

The sample were all females and most were single, less than 30 years of age, and had no dependents while they were in the program. They were mainly prepared in two year hospital based training programs and had not completed any other education since graduation. The average length of nursing experience prior to the program was 4.7 years with a range from less than one year to more than 15 years.

The only obvious limitation to this data was in the accuracy of the self-report. The sample appeared to be representative on population variables that were identifiable including course grade, session attended and unit assigned following course completion. The sample did, however, appear to under-represent graduates who had left the institution. No other biases were detected.

Clinical Competency Ratings

Limitations to the clinical competency ratings are more numerous. Subjects rated themselves upon their perceived clinical competency and any self-report is open to subject bias. There were no definitions of acceptable performance within the tool to standardize assessment of levels of performance. Attempts to substantiate or refute the graduate ratings by incorporating supervisor ratings were hampered by insufficient supervisor return rates. Using a five point Likert-type scale may have resulted in a response set bias and an individual may have tended to select similar ratings consistently.

Since this was the first time the rating tool had been employed, assigning meaning to the scores should be done with great caution. It was of interest to note that the cardiovascular category was the lowest ranked component despite the fact that it accounts for the largest amount of class content in the program and the most content in any general critical care text. It may be that the complexity of the material and the variety of skills within this category makes it the most difficult to master. It seemed reasonable to expect that nurses employed in particular units might score significantly better on some categories given their experience. For example, the nurses in the coronary care and cardiovascular intensive care units might be expected to score higher on the cardiovascular category. However, there was no significant differences in scores on categories or total clinical competency score in relation to type of intensive care unit. The standards that the nurses set for themselves for different categories cannot be determined from the questionnaire. Interviews would probably be required to attempt to obtain this information. It may be that nurses set higher expectations for themselves in content areas with which they are most familiar.

Recommendations

The results of the questionnaire and experience as an educator in the program led to the following recommendations for the CCOP. These recommendations must be further evaluated within the political environment of the hospital. Limitations such as budget, time, staffing needs, and union contracts must be considered but are not the focus of the following recommendations. The final decisions should be made by the administrators and educators of all the adult critical care units and information from the study will be presented for their consideration.

Program Revision

The current eight week program is costly and graduates describe it as "overwhelming" and "too much in too little time". Presenting only essential content initially and providing clinical practice opportunities to integrate the content should be less stressful and result in safe competent practice. The advanced content that is currently presented in the program could be provided at a later date when the graduates have mastered basic content and skills and can see the relevance of the extra content. Creating a situation where the nurses can identify the relevance of the content would help insure that nurses effectively utilize learning opportunities. In addition, deferring part of the course would be advantageous from the administrative perspective. Funding would be provided to nurses who had survived the initial period and would be a source of reward and recognition for those who stayed. The second class block would be consistent with the framework of levels of practice that is being implemented in the adult critical care area.

A stronger sense of student responsibility should be promoted. Self-paced instructional packages to review basic physiology and pathophysiology, as well as drug review and calculations could be developed. The use of learning contracts to clearly delineate both learner and teacher expectations is also feasible. A return to service commitment of a predetermined time period, such as one year, might be required to help insure an acceptable return on orientation expenditures.

Testing within the program should be consistent in format and focus more upon integration of material as the course progresses. Quiz and examination results should be routinely recorded and analyzed. Inclusion of a pretest posttest design for data collection is strongly recommended to begin to directly assess the knowledge contribution of the program. Should any major revisions be decided upon, evaluation must be planned prior to implementation to permit stronger research design alternatives.

Questionnaire Development

The questionnaire should be shortened if it is used in the future. It could be employed as a diagnostic tool for the nurse and educator to identify learning and clinical experience needs. If competency-based criteria were developed the questionnaire could be used to provide a more standardized and relevant evaluation for critical care nurses. Administrators could use the abbreviated tool to evaluate employees on knowledge and skills directly related to their clinical area rather than use the generic tool currently available in the institution. The supervisors could have nurses complete the form as a self-assessment and include it in the formal performance appraisal. The supervisor and nurse might even compare their ratings and negotiate a final rating that would be part of the formal performance appraisal.

One vital issue not directly assessed in the questionnaire was organizational and priority setting abilities. These skills should be incorporated in the questionnaire.

The implications for future research related to the questionnaire are issues related to any instrument development. Validity and reliability should be established and the instrument should be tested with critical care nurses not prepared in the program as well as in other institutions.

Administrative Concerns

Program participants should be selected on the basis of education and experience. The program is based on the assumption that the nurse meets the requirements to be a registered nurse. The course is not designed to meet remedial needs in physiology, mathematics or basic nursing knowledge and skills. A pretest of basic physiology and mathematics would provide the supervisors with useful information to assist them with their hiring decisions. Assessment of basic nursing knowledge and skills would probably be better assessed by experienced supervisors through the interview process and reference checks.

Staff turnover should be routinely monitored and records kept. Implementation of exit interviews would provide a valuable source of additional information and the reasons for leaving should be recorded and evaluated. An individual not directly supervising the personnel might be less threatening and elicit more information in these interviews. Results of staff retention monitoring and exit interviews should be shared with appropriate staff at the discretion of the Director of Nursing. There is no point in providing an extensive orientation program if the graduates are leaving the institution in large numbers after short periods of employment. Orientation must be an investment in quality nursing practice that justifies the expenditures for the institution.

There has also been a need identified for expertise in program planning and evaluation in the instution. The demand for accountability is likely to increase not diminish. The development and promotion of planning, evaluation and research skills should be encouraged within the institution so that resources are readily accessible to promote formal evaluation by employees not directly involved in the programs under review. These projects should not be assigned in addition to regular duties but recognized as time-consuming and valuable projects in their own right. External review by professionals is not likely to become a financially viable option so development of 'in-house' resource people may be a feasible alternative.

Summary

Stufflebeam's (1971) model has provided direction for evaluation of the CCOP. While product evaluation was the predominant focus of the survey, this chapter has addressed all components and the discussion and recommendations have been made within this framework. The final decisions will be made based upon broader concerns than the pedagogical issues most familiar to this author. The administrative realities of budget and time constraints, as well as perceived benefits will ultimately influence administrative decisions. The viability of some of the alternatives presented must be critiqued by those involved. If any recommendations are accepted program planning should be instituted by personnel with adequate training. Program planning will require formal evaluation and this preplanning will permit selection of a stronger research design. The identification of core critical care skills as presented in the clinical competencies tool may be modified to provide some direction for evaluation of basic competencies in critical care nursing but future research should not rely solely upon self report. There is much work to be done in this area and program evaluation does not appear to be a common area of expertise. The exposure that the graduates, educators and administrators have received to some of the concepts of program evaluation may indeed be the most valuable contribution of this study.

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Appendix A

Quizzes and Final Examination

QUIZ #1

CENTRAL NERVOUS SYSTEM

CHOOSE THE BEST ANSWER: 1/2 POINT PER QUESTION
TOTAL VALUE 5 MARKS

1. Cerebral metabolism is most dependent on oxygen and:
   - a. lipids
   - b. sodium
   - c. glucose
   - d. all of above

2. Most frequent assessment of neurological status is by:
   - a. motor response to stimuli
   - b. pupillary reaction
   - c. level of consciousness
   - d. respiratory patterns

3. Normal cerebrospinal fluid contains
   - a. electrolytes, leukocytes and protein
   - b. glucose, leukocytes, and protein
   - c. electrolytes, glucose and protein
   - d. electrolytes, leukocytes

4. Neuorlogical assessment parameter that first indicates uncal herniation is:
   - a. stuporousness
   - b. one pupil dilating
   - c. decortical positioning
   - d. central neurogenic hyperventilation

5. Increased intracranial pressure may be treated with:
   - a. Tensilon and phenobarbital
   - b. Dexamethasone and valium
   - c. Methylodpa (aldomet) and mannitol
   - d. Dexamethasone and mannitol

6. A subdural hematoma is:

   a. arterial bleeding between the skull and meninges
   b. arterial bleeding between brain and meninges
   c. venous bleeding between brain and meninges
   d. venous bleeding between skull and meninges

7. The sleep/awake centre is located in the:

   a. Reticular Activating System
   b. Cerebral cortex
   c. corpus collosum
   d. nasal nuclei

8. The autonomic nervous system is primarily controlled by the:

   a. Thalmus
   b. Hypothalmus
   c. Cerebral Cortex
   d. Pons

9. Which of the following is symptomatic of spinal shock?

   1. loss of autonomic nervous control
   2. areflexia below the lesion
   3. loss of sensation below the lesion
   4. flaccid paralysis below the lesion

   a. 1, 2 and 3
   b. 1, 2 and 4
   c. 2, 3 and 4
   d. 1, 2, 3 and 4

10. Normal intracranial pressure is:

    a. 0 - 100 cm H_2O, 4 - 15 mmHg
    b. 25 - 150 cm H_2O 0 - 10 mmHg
    c. 80 - 180 cm H_2O, 0 - 15 mmHg
    d. 100 - 200 cm H_2O 10 - 25 mmHg

Quiz #2 - Part I

Short Answer Questions

Value: 4 Marks

1. The P wave represents ________________________ of the atria and is normally ____________________________.

2. The QRS complex represents __________________________ of the ventricle.

3. The T wave represents ________________________________ of the ventricle.

4. The normal P-R interval is ______________________________ long.

5. The normal duration of the QRS complex is ______________________________

6. The ST segment is normally _________________________________ and correlates with ____________________________________.

Part II

Value: 6 Marks

Interpret each of the following ECG strips to the best of your ability.

1.

P wave ____________________ ST segment ____________________

P-R interval ____________________ T wave __________________

QRS interval
& characteristics ________________________

Rate ______________________

Impression ______________________________

____

CARDIOVASCULAR SYSTEM

Quiz #3

Choose the best answer. Value 5 marks.

1. Myocardial after load is determined by:

    a. LVEDP (left ventricular end-diastolic pressure)
    b. RVEDP (right ventricular end-diastolic pressure)
    c. Cardiac output and stroke volume
    d. Resistance to left ventricular ejection

2. Myocardial ischemia is caused by:

    a. oxygen toxicity
    b. increased myocardial oxygen consumption
    c. decreased myocardial oxygen consumption
    d. imbalance between myocardial oxygen needs and oxygen availability

3. Preload is determined by myocardial fiber length at:

    a. beginning of diastole
    b. beginning of systole
    c. end diastole
    d. end systole

4. Dyspnea is primary sign in:

    a. Right Heart Failure
    b. Left Heart Failure
    c. Biventricular Heart Failure
    d. Essential hypertension

5. An **undesirable** side effect of positive inotropic agents such as isoproterenol (Isuprel) is:

    a. increased myocardial automaticity
    b. increased myocardial contractility
    c. increased myocardial conductivity
    d. increased myocardial oxygen demands

6. Tachycardia affects the myocardium by:

    a. decreasing myocardial oxygen supply
    b. decreasing force of contraction
    c. decreasing coronary artery filling time
    d. all of the above

7. Ventricular fibrilation results in:

   a. no cardiac ouput
   b. no systemic circulation
   c. no adequate myocardial contraction
   d. all of the above

8. Criteria for normal sinus rhythm include:

   a. regular rhythm with a rate of 60 - 100/minute
   b. normal P, QRS, and T waves
   c. normal P-R interval and QRS duration
   d. all of the above

9. Left ventricular failure occurs most often with a (an):

   a. Anterior wall M.I.
   b. Inferior wall M.I.
   c. Lateral M.I.
   d. Posterior M.I.

10. THe sympathetic nervous system attempts to compensate for decreased cardiac output and hypotension following an AMI by:

   a. decreasing heart rate and force of contraction
   b. increasing heart rate and stroke volume
   c. decreasing heart rate and stroke volume
   d. increasing heart rate and force of contraction

Instructions:

Comment on each set of blood gas results in relation to:

(1) oxygenation
(2) ventilation
(3) Acid:Base balance
(4) Possible diagnosis

NOTE: seCO_2 reflects HCO_3^-

1. FIO_2 3L/specs

pO_2	100
pCO_2	20
H^+	60
SaO_2	92%
seCO_2	10

2. FIO_2 .21

pO_2	45
pCO_2	65
H^+	65
SaO_2	86%
seCO_2	24

3. FIO_2 .21

pO_2	74
pCO_2	20
H^+	30
SaO_2	95%
seCO_2	16

4. FIO_2 $.6^{+10}$

pO_2	60
pCO_2	60
H^+	68
SaO_2	85%
seCO_2	18

5. FIO_2 $.45^{+5}$

pO_2	60
pCO_2	55
H^+	48
saO_2	90%
seCO_2	32

6. FIO_2 .21

pO_2	95
pCO_2	25
H^+	20
SaO_2	95%
seCO_2	32

7. FIO_2 .35

pO_2	80
pCO_2	39
H^+	39
SaO_2	96%
$seCO_2$	25

8. FIO_2 1.0^{15+}

pO_2	45
pCO_2	70
H^+	80
SaO_2	79%
$seCO_2$	18

9. FIO_2 .21

pO_2	100
pCO_2	25
H^+	25
SaO_2	97%
$seCO_2$	24

10. FIO_2 5L mask

pO_2	58
pCO_2	113
H^+	51
seO_2	85%
$SeCO_2$	55
B.E.	+21.3

PULMONARY SYSTEM

QUIZ #5

1. An endotracheal tube may contribute to which of the following complications:

   a. tracheal necrosis
   b. airway obsturction
   c. infection
   d. all of the above

2. Intrapulmonary shunt volume can be estimated by measuring:

   a. Alveolar-venous oxygen difference
   b. Alveolar-arterial oxygen difference ($AaDO_2$)
   c. pCO_2
   d. paO_2

3. Patients with acute respiratory distress syndrome (ARDS) may experience the following complication(s):

   a. cardiac dysrhythmias
   b. acid-base imbalance
   c. infection
   d. all of the above

4. Dopamine is classified as a:

   a. Vasodilator
   b. Antiarrhythmic
   c. Inotropic agent

5. The H^+ concentration of the arterial blood gas results is indicative of:

   a. hypoxia
   b. hypercapnia
   c. metabolic alkalosis
   d. acid-base balance

6. IV nitroglycerine achieves a balance between myocardial oxygen demand and supply by:

   1. reducing myocardial preload
   2. causing vasoconstriction of vascular bed
   3. reducing myocardial oxygen demands
   4. slowing heart rate
   5. causing primary arterial bed dilation

   a. 1, 3 and 5
   b. 4 and 5
   c. 1 and 3
   d. 2 and 4

7. The following statements are true in relation to a respirtory alkalosis:

   1. It is usually the result of hyperventilation.
   2. The PCO_2 is decreased.
   3. Thye kidneys compensate by reabsorbing HCO_3^-.
   4. The (H^+) is decreased.

   a. 1 and 4
   b. 1, 2 and 4
   c. 2 and 3
   d. 1 and 3

8. The following statements are true in relation to metabolic acidosis:

   1. H^+ concentration is increased.
   2. HCO_3^- or Se CO_2 is decreased.
   3. $PaCO_2$ is decreased.
   4. $PaCO_2$ is increased.
   5. Caused by hypoventilation.

   a. 1, 2 and 5
   b. 2 and 4
   c. 1, 2 and 3
   d. 2, 4 and 5

9. A shift to the right of the "oxyhemoglobin dissociation" curve may be caused by all of the following, **EXCEPT:**

   a. acidosis (increased H^+)
   b. alkalosis (decreased H^+)
   c. hyperthermia
   d. increased 2.3 DPG

10. A major complication aossciated with the use of PEEP is:

    a. abdominal distention
    b. atelectasis
    c. pneumothorax
    d. laryngeal spasm

QUIZ #6 RENAL, HEMATOLOGY, GASTROINTESTINAL

1. Nursing interventions in transfusion reacitons include:

   a. monitor patient closely but continue transfusion
   b. have emergency drugs available and a patent I.V. line
   c. stop trasnfusion. Monitor patient. Notify physician and blood bank.
   d. Both b and c

2. Thrombocytes are also known as:

   a. bands
   b. segs
   c. Platelets
   d. All of above

3. Thrombocytes are essential in:

   a. production of erythrocytes
   b. maintenance of hemostasis
   c. cellular immunity mechanism
   d. humoral immunity mechanism

4. Erythropoietin appears in the circulatory blood in response to:

   a. blood loss of more than 5%; total volume
   b. hypoxemia
   c. hypercapnia

5. Humoral immunity involves:

   a. B - lymphocytes
   b. T - lymphocytes
   c. Both a and b
   d. Neither a or b

6. Acute renal failure secondary to decreased glomerular filtration pressure is classified as:

   a. high output failure
   b. prerenal failure
   c. intrarenal failure
   d. none of the above

7. Urine sodium levels in prereanl hypovolemic renal failure will be:

   a. normal
   b. high
   c. low

8. Intrinsic renal failure may be caused by:

   1. Hypovolemia
   2. Hypervolemia
   3. Aminoglycoside antibiotics
   4. Toxins
   5. Contraast media

   a. 2, 3 and 4
   b. 1 and 3
   c. 1, 3, 4 and 5
   d. 2, 3, 4 and 5

9. The liver plays a significant role in:

   a. digestion
   b. hematopoiesis
   c. coagulation
   d. all of above

10. It is essential that the critically ill patient be given maximal nutritional support within the first 24 hours of the illness.

    TRUE or FALSE

UNIVERSITY OF ALBERTA HOSPITALS

FUNDAMENTALS IN CRITICAL CARE NURSING

LEVEL ONE - ORIENTATION

FINAL EXAMINATION

FORM A

September, 1986

EXAMINATION INSTRUCTIONS

Examination Time: 3 hours

Answer all questions completely. Additional paper is available should you require it.

The examination includes multiple choice, matching, definitions and short answer questions. Read each question carefully before answering it.

Total Examination Value = **138 marks**

Percentage Value **100%**

Final Examination comprises **60%** of final course mark.

Section I Multiple Choice Questions

Value 10 Marks; 1 mark for each correct answer.

1. Intrapulmonary shunt volume can be estimated by measuring:

   a) Alveolar-venous oxygen difference

   b) PCO_2

   c) PO_2

   d) Alveolar-arterial oxygen difference

2. The first priority in assessing a patient with an acute head injury is to:

   a) determine the absence of a cervical spine injury

   b) identify the level of consciousness

   c) assure patent and effective ventilatory status

   d) identify presence of shock and initiate an intravenous line for blood, vasopressors and drugs

3. The normal intrinsic ventricular rate of heart is:

   a) 60 - 80

   b) 20 - 40

   c) 40 - 60

   d) 60 - 100

4. The sleep-wake center is located in the:

   a) cerebral cortex

   b) corpus collosum

   c) reticular formation

   d) basal nuclei

5. Hypoxemia can be the end result of:

   a) Hypoventilation and/or uneven ventilation

   b) right to left shunting and/or diffusion defects

   c) a and b

   d) none of the above

6. Trousseau's sign is:

   a) occluded circulation to the arm, resulting in cellulitis

   b) tapping of the facial nerve, resulting in contraction of facial muscles

   c) position of the hand with fingers flexed (carpopedal spasm)

   d) none of the above

7. Early signs of hypovolemic shock include:

   a) decreasing blood pressure increasing pulse

   b) increasing respiratory rate

   c) all of the above

8. Blood groups are determined by the:

   a) the antibody on the surface of the erythrocyte

   b) the antigen on the surface of the erythrocyte

   c) the IgD since it crosses the placental barrier

   d) none of the above

9. Calcium moving into the myocardial cell:

   a) decreases contractility

   b) increases contractility

   c) increases conduction

   d) decreases conduction

10. Normal cerebrospinal fluid will contain:

    a) electrolytes, leukocytes, and protein

    b) glucose, leukocytes and protein

    c) electrolytes, glucose and protein

    d) electrolytes, leukocytes and glucose

Section II Definitions

define each of the following terms:

Value: 1 mark each. Total Value 16 marks

a) Stroke volume

b) Cardiac Output

c) Cardiac Index

d) Preload

e) Afterload

f) Intramyocardial wall tension

g) Pulmonary vascular resistance (PVR)

h) Systemic vascular resistance (SVR)

i) Systole

j) Diastole

k) Compliance

l) Surfactant

m) Acidosis

n) Alkalosis

o) Vital capacity

p) P.E.E.P.

Section III Matching Questions

Match each item on the left with the **most appropriate** answer in the column on the right. Items on the right may be used more than once if necessary.

Value 1/2 mark per question. Total Value 8 marks

______ Potassium
______ Sodium
______ Dopamine
______ Nitroprusside
______ Dobutamine
______ Isuprel
______ Epinephrine
______ Calcium
______ Nitroglycerine I.V.
______ Atropine
______ Dilantin
______ Procainamide
______ Digoxin
______ Mannitol
______ Pavulon
______ Neostigmine

a. Vasodilator
b. Vasoconstrictor
c. Positive Inotropic Agent
d. Cardiac Repolarization
e. Cardiac Depolarization
f. Antiarrhythmic Agent
g. Vagal Blocking Agent
h. Anticonvulsant
i. Muscle Relaxant
j. Anticholinesterase Agent
k. Osmotic Diuretic
l. Sympathiomemetic
m. Increase contractility

Section IV Short Answer Questions

Answer each question completely.

Value

5

1. a) Identify the 4 chambers of the heart and the normal pressure in each chamber

(2)

b) State the normal Pulmonary Artery Pressure (PAP) and Pulmonary Capillary Wedge Pressure (PCWP).

(1)

c) Identify the chambers of the heart and valves through which the Pulmonary Artery Catheter passes.

(2)

Value

6

2. a) Identify and briefly discuss 4 major factors that affect cardiac output.

(4)

b) Briefly explain the Frank-Starling Principle in relation to cardiac output.

(2)

Value

4

3. a) Differentiate between defibrillation and synchronized cardioversion in terms of delivery of electrical current and strength of the voltage.

(2)

b) Identify the clinical indications for defibrillation and synchronized cardioversion.

(2)

Value

8

4. a) Differentiate between a synchronized pacemaker and an asynchronous pacemaker.

(2)

b) Identify 2 clinical indications for a pacemaker.

(1)

Value

4. c) Differentiate between atrial, ventricular and AV sequential pacemakers.

(3)

d) What precautions must be taken when defibrillating a patient with a pacemaker.

(2)

Value

4

5. a) Briefly differentiate between myocardial ischemia (angina) and myocardial infarction in terms of: tissue changes, response to nitrates and ECG changes.

(2)

b) Identify the cardiac enzymes and briefly describe their role in diagnosing an acute MI.

(2)

Value

10

6. John is a 50 year old man admitted to the Coronary Care Unit following an acute anterior wall MI. Upon admission, he was complaining of severe chest pain, dyspnea, and nausea. A PA catheter was inserted. Vital signs were as follows:

BP 100/60

HR 60 - 70, with frequent PVC's, multi-focal

RR 25-30

Chest auscultation - scattered crackles and wheezes

Periphery - cool, slightly diaphoretic, legs mottled, peripheral pulses weak

Urine output 15 - 20 cc/hour

Hemodynamic Values

CVP - 10
PAP - 35/20
PCWP - 20
C.I. - 2.9 L/min/m^2

a) Based on the admission data, the following drug therapy was initiated. Discuss each drug in terms of:

a) function of each drug - action

b) rationale for use for this patient

c) major side effects that may be encountered

Value

6. a) Xylocaine at 4 mg/min

(2)

Dopamine at 3 mcg/kg/min

(2)

Value

Dobutrex at 10 mcg/kg/min

(2)

Nitroglycerine at 5 mcg/min may be titrated up to maximum of 25 mcg/min in accordance with chest pain and systolic blood pressure.. Keep systolic pressure > 100 mmHg.

(2)

Value

6. b) Calculate the hourly infusion rates for each of the following drugs. Show all calculations. Patient's weight is 80 kg.

Nitroglycerine 16 mg in 135 ml. D5W total volume at 10 mcg/min.

(2)

Dopamine 1200 mg/500 cc D5W at 3 mcg/kg/min.

(2)

Value

10

7. a) Define the term intracranial pressure.

(1)

b) State the normal intracranial pressure.

(1)

c) Describe the relationship between cerebral perfusion pressure (CPP), intracranial pressure (ICP), and mean arterial blood pressure (MAP).

(2)

d) Identify 4 signs and symptoms of increased intracranial pressure.

(2)

e) Define the term "cerebral herniation".

(1)

f) Identify the physiologic outcome if cerebral herniation goes unrecognized and/or untreated.

(1)

Value

g) Identify 4 nursing care measures that are important in caring for a patient with increased ICP.

(2)

8. Bill, a 20 year old University student was admitted to the Neurosurgical ICU following a motorcycle accident with a diagnosis of C5-6 fracture, quadraplegia.

a) Identify 2 major complications associated with an acute C5-6 spinal fracture and identify the physiologic reasons for each complication.

(2)

b) Briefly discuss the assessment and treatment measures you would employ in relation to each complication identified in 8 a).

(4)

Value

11

9. Susan is a 19 year old girl admitted to the General Intensive Care Unit from the OR following a motor vehicle accident. Diagnosis on admission was: Left Flail Chest, Ribs 5-9, Pulmonary Contusion, # left arm and left femur, ruptured spleen, multiple facial fractures.

Surgical interventions included: Splenectomy, external fixation of the left femur and tracheostomy. Facial trauma would be repaired once the swelling decreased. A p.p. case was applied to the left forearm. Pre-admission weight was 50 kg.

Questions to follow are related to ventilatory management for Susan.

a) On admission, she was placed on an MA_2, volume ventilator, on assist control of 12, VT 700 ml.; Peak airway pressures were 40 cm H_2O. FIO_2 .5, PEEP 5 cm.

1.Describe the terms:

(2)

Volume ventilator -

Assist-control mode of ventilation -

Peak airway pressures -

FIO_2

Value

9. (cont.)

2. Discuss the rationale for using a PEEP of 5 cm H_2O on this patient.

(1)

3. Define the term "flail chest".

(1)

4. Susan has a portex tracheostomy tube in place. Describe the "minimal leak technique" for cuff inflations.

(1)

9. b) Two weeks post injury, Susan's spontaneous respiratory parameters were as follows:

4

VT - 500 ml
VC - 750 ml
PIP - -30 cm H_2O
Minimal flail noted with minimal chest pain

1. Identify the normal values needed for each parameter to begin the weaning process.

(3)

2. In your opinion, are Susan's parameters adequate to begin the weaning process?
Explain your answer.

(1)

2 9. c) Orders are written to begin weaning Susan from the ventilator. The order reads:

"Begin weaning. IMV 8, FIO_2 .35 with 5 PEEP"

1. Describe the term IMV.

(1)

2. Discuss the rationale for using IMV as a mode of weaning for Susan.

(1)

9 10. a) Identify 3 classifications of Acute Renal Failure.

(3)

b) Differentiate between each classification and identify 2 causes for each type of renal failure.

(6)

7 11. a) Define the term "shock".

(1)

b) Describe 3 classifications of shock and give 2 clinical causes of each classification.

(6)

Section V Blood Gas Interpretation & ECG Rhythm Analysis

Value

10 1. Blood Gas Interpretation

For each given situation, analyze the arterial blood gas in terms of oxygenation, ventilation and aicd-base balance, impression or problem. If appropriate, give suggestions for intervention and/or treatment.

(2 each)

a) A post intestinal bypass patient is admitted to the ICU. Initial ABG's are:

FIO_2 - .21

pO_2 - 100 mmHg

$paCO_2$ - 10 mmHg

$[H^+]$ - 100

SaO_2 - 90%

$SeCO_2$ - 7 meq/L.

Interpretation:

1. b) An asthmatic patient is admitted to the ICU in "status asthmaticus". Patient is admitted for observation and close monitoring.

FIO_2 - 5 L by mask

pO_2 - 80 mmHg

$paCO_2$ - 20 mmHg

$[H^+]$ - 35 mmHg

SaO_2 - 96%

$SeCO_2$ - 16 meq/L

Interpretation:

1. c) Joe is a 16 year old boy admitted following a motor vehicle accident. At the time of the following blood gases, he was in full blown ARDS.

FIO_2 - .7 +12.5

pO_2 - 50 mmHg

$paCO_2$ - 65 mmHg

$[H^+]$ - 48 mmHg

SaO_2 - 86%

$SeCO_2$ - 32 meq/L

Interpretation:

1. d) A patient with a barbiturate overdose was admitted to the Emergency Department. Initial blood gas results are as follows:

FIO_2 - .21

pO_2 - 40 mmHg

$paCO_2$ - 60 mmHg

$[H^+]$ - 60

SaO_2 - 80%

$SeCO_2$ - 24 meq/L

Interpretation:

1. e) Mr. Brown was admitted to the Emergency Department in full arrest. Initial blood gases were as follows:

CPR with artificial respiration were in progress.

FIO_2 - .21

pO_2 - 30 mmHg

$paCO_2$ - 70 mmHg

$[H^+]$ - 85

SaO_2 - 45%

$SeCO_2$ - 10 meq/L

Interpretation:

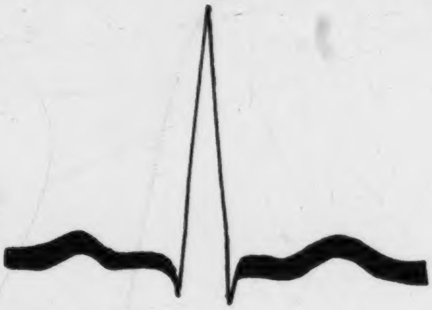
Value

12

2. **ECG Interpretation**

Each question is worth 2 marks

a) Label the diagram below - a normal cardiac cycle and indicate th normal values for the parameters stated.



P.R. interval

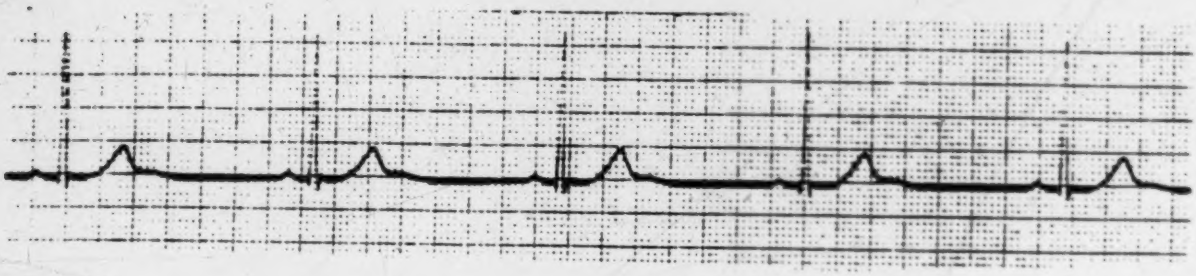
QRS interval

ST segment-characteristics

T wave characteristics

2. b) Interpret each of the following ECG rhythm strips

1. Strip



P wave ______________________________

P-R Interval ______________________________

QRS Interval & Characteristics ______________________________

____

ST Segment ______________________________

T wave ______________________________

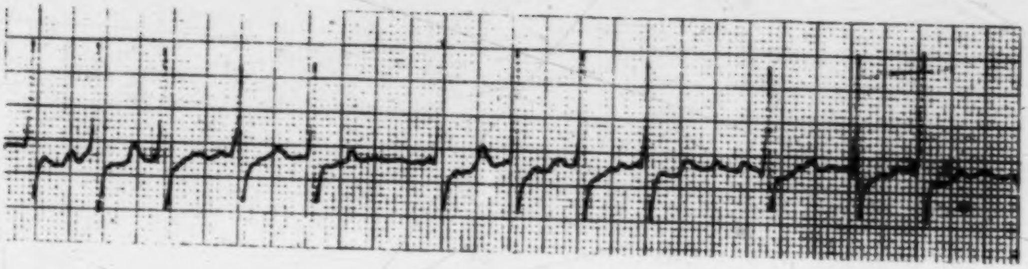
Rate ______________________________

Impression
(Underlying rhythm and
any abnormalities) ______________________________

____

____

2. Strip



P wave ____

P-R Interval ___________________________________

QRS Interval & Characteristics _______________________

____

ST Segment ____________________________________

T wave ____

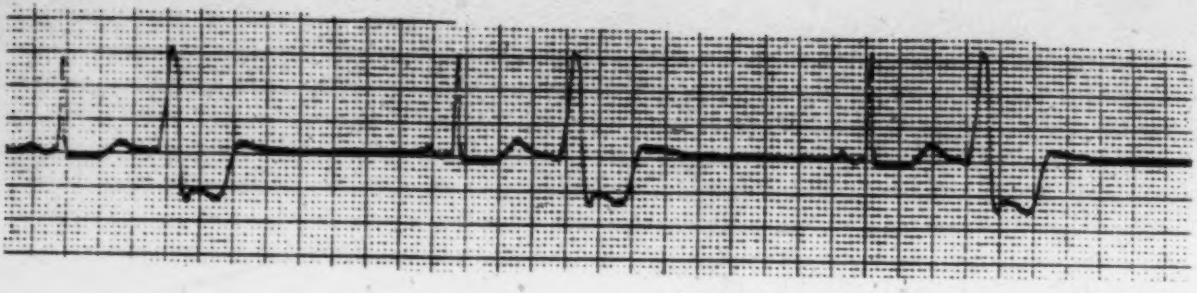
Rate ____

Impression
(Underlying rhythm and
any abnormalities) ____________________________

____

____

3. Strip



P wave ______________________________

P-R Interval ______________________________

QRS Interval & Characteristics ______________________________

____

ST Segment ______________________________

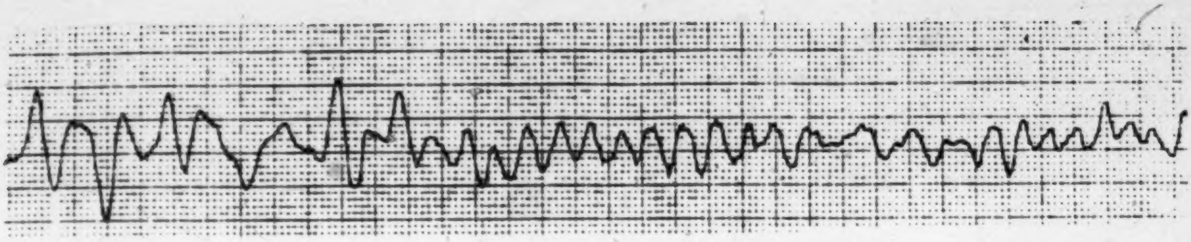
T wave ______________________________

Rate ______________________________

Impression ______________________________
(Underlying rhythm and
any abnormalities) ______________________________

____

4. Strip



P wave ______________________________

P-R Interval ______________________________

QRS Interval & Characteristics ______________________________

____

ST Segment ______________________________

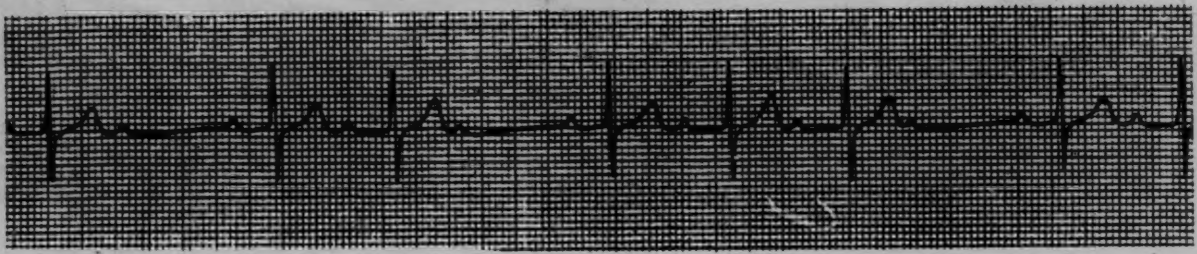
T wave ______________________________

Rate ______________________________

Impression ______________________________
(Underlying rhythm and
any abnormalities) ______________________________

____

5. Strip



P wave ____________________

P-R Interval ____________________

QRS Interval & Characteristics ____________________

____

ST Segment ____________________

T wave ____________________

Rate ____________________

Impression
(Underlying rhythm and
any abnormalities) ____________________

____

____

Appendix B

Post Course Evaluation

UNIVERSITY OF ALBERTA HOSPITALS

FUNDAMENTALS IN THEORIES OF CRITICAL CARE NURSING

COURSE EVALUATION

May, 1986

Your input in the evaluation of the Fundamentals in Theories of Critical Care Nursing Programme is extremely valuable in the future planning of the programme. Please answer each question based on your personal opinions and feelings.

1. Do you feel that the objectives were appropriate to your learning needs?

   Yes____ No____

   Comments:

2. Do you feel, in general, that the objectives of the programme were met during classroom lectures and discussions?

   Yes____ No____

   Comments:

3. Did required readings in textbooks adequately supplement lecture material and classroom discussions?

   Yes____ No____

   Comments:

4. Do you feel the lecture handout material was directly related to the lecture content?

   Yes____ No____

   Comments

5. Do you feel the supplemental articles provided throughout the course increased your comprehension of lecture content?

   Yes____ No____

   Comments:

6. Are there any articles that you would highly recommend or not recommend for use in future programmes?

Yes____ No____

Please specify.

7. Did the critical care orientation instructor appear knowledgable in relation to programme material that was presented?

Yes____ No____

Comments:

8. How much participation by guest lectures do you feel is appropriate for this programme?

Yes____ No____

Comments:

9. Were teaching methods conducive to learning?

Yes____ No____

Comments:

10. Do you feel the use of mini-quizes throughout the programme is an appropriate measure of learning?

Yes____ No____

Comments:

11. Having completed the theoretical component of the Critical Care Orientation programme, how would you describe it to nurses interested in pursuing a career in critical care nursing?

Appendix C

Skills Checklist

CRITICAL CARE ORIENTATION EVALUATION (Level 1)

Revised March, 1987
from Neonatal ICU

NAME ______________________________

DATE OF ORIENTATION ______________________________

BACKGROUND HISTORY

YEAR OF GRADUATION ______________________________

WORK EXPERIENCE ______________________________

____

____

____

____

OVERALL SELF-OBJECTIVES

GENERAL ______________________________

____

____

SPECIFIC ______________________________

____

____

____

This evaluation form is constructed in a manner where both self evaluation and evaluation by the clinical instructor can be incorporated. Following is an explanation of how to fill out the checklist portion of the evaluation.

CHECKLISTS OF CONCEPTS AND SKILLS RELATED TO INTENSIVE CARE

Please indicate your level of knowledge or skill according to the legend described below. Consider the concepts and skills as they pertain to the critically ill. Record the maximum level you feel you are at by marking the appropriate column. If, however, you do not recognize the term, leave blank. You will make three (3) evaluations for each skill: (1) at the end of the clinical day, (2) at the end of five (5) weeks, and (3) at the end of eight (8) weeks.

LEGEND

RECOGNITION OF TERM (Concept)

Indicates a level of knowledge including:

- knows the meaning of the term
- has a basic idea of what the term involves
- has heard it described, seen, or has read about it

NEEDS GUIDANCE

Indicates a level of knowledge including:

- fulfillment of all points under RECOGNITION OF TERM
- has more than a basic idea of what the term involves but requires assistance in application of the concept
- requires supervision in performance or assisting with procedures
- requires direction in locating and using equipment

FEELS CONFIDENT

Indicates a level of knowledge including:

- fulfillment of all points under RECOGNITION OF TERM and NEEDS GUIDANCE
- has a clear understanding of the concept or term and implements it accordingly into patient care
- has performed or assisted with the procedure a sufficient number of times so as to feel competent and confident with it
- is able to locate and use the equipment with no assistance
- on an overall basis requires minimal supervision

CLINICAL DAY 1 APPLICATION OF KNOWLEDGE	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
APPLICATION OF KNOWLEDGE:										
1. Patient assessment - evaluate neuro status for a conscious and unconscious patient										
2. Accurately record observations (on last page)										
3. Demonstrate knowledge to assess changes in physical signs and symptoms.										
4. Review the patient chart/flow sheet for:										
intake and output										
medications										
lab reports										
nursing assessments										
medical assessment/progress										
nursing kardex										
SAFETY AND DEPENDABILITY:										
1. Locate UAH and ICU policies and resource manuals.										
2. Locate medications.										
3. Locate narcotic cupboard, keys and narcotic sheet										
4. Locate:										
fire alarm(s)										
fire extinguisher(s)/hose(s)										
call bell/emergency bell										
arrest cart										
5. Provide for physical patient safety.										
6. Requests assistance when required.										
7. Provide accurate verbal report for any significant patient changes or upon request.										
8. Accept responsibility for own actions.										
9. Identify weaknesses in clinical or theoretical practice to appropriate personnel.										

CLINICAL DAY 1 - page 2

APPLICATION OF KNOWLEDGE

	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
INITIATIVE:										
1. Offer assistance to co-workers (e.g.: help with mouthcare, skin care and positioning)										
2. Seek feedback regarding skills and knowledge.										
3. Utilize available resources to increase knowledge or skills										
ATTITUDES AND PROFESSIONAL BEHAVIOR:										
1. Acknowledge own limitations .										
2. Is receptive to suggestions from others.										
3. Respond appropriately to constructive criticism.										
4. Maintain a tolerant attitude.										
INTERPERSONAL RELATIONSHIPS:										
1. Demonstrate respect and kindness to patients, families and staff in part by:										
locating visitor lounge										
reviewing Unit visiting policies										
Identifying usual staff break times										
2. Display tact.										
3. Identify support personnel and their roles.										
UNIT SPECIFIC OBJECTIVES:										

CLINICAL DAY 1 - page 3

APPLICATION OF KNOWLEDGE	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
SAMPLE NEURO ASSESSMENT: Conscious Patient										
Unconscious Patient										

CLINICAL DAY 2

APPLICATION OF KNOWLEDGE

	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
APPLICATION OF KNOWLEDGE:										
1. Completes a basic neuro and CV assessment.										
2. Accurately record assessments (on last page)										
3. Review blood work and complete analysis of cardiac enzymes (on last page)										
4. Identify the difference, if any, between cuff and transducer blood pressures.										
5. Observe blood withdrawal from an arterial line.										
6. Withdraw blood from an arterial line with supervision by:										
a) collecting supplies and explaining to patient										
b) labelling specimen(s) correctly										
c) completing appropriate requisition(s)										
d) dispatching to appropriate lab										
7. Review your patient's drugs and:										
a) identify each drug's class										
b) relate the indication(s) for each drug to your patient.										
SAFETY AND DEPENDABILITY:										
1. Provide for safe care of arterial line by:										
a) withdrawing blood using aseptic technique										
b) checking site and waveform pattern										
c) balancing and calibrating line with supervision										
2. Identify all drugs used for your patient and know where a supply of each is located (in addition to the bedside)										
3. Take at least 3 EKG strips and complete last page for next class day.										
4. Provide for physical patient safety.										
5. Communicate changes in patient to nurse buddy.										
6. Request assistance as needed.										
7. Provide accurate verbal report.										
8. Accept responsibility for own actions.										
9. Identify areas of weakness in practice to appropriate personnel.										

CLINICAL DAY 2 - page 2

APPLICATION OF KNOWLEDGE

	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
INITIATIVE:										
1. Offer assistance to co-workers.										
2. Seek feedback regarding skills and knowledge.										
3. Utilize available resources appropriately.										
ATTITUDES AND PROFESSIONAL BEHAVIOR:										
1. Acknowledge own limitations.										
2. Is receptive to suggestions from others.										
3. Respond appropriately to constructive criticism.										
4. Maintain a tolerant attitude.										
INTERPERSONAL RELATIONSHIPS:										
1. Demonstrate respect and kindness to patients, families and staff.										
2. Display tact.										
3. Effectively work with support staff.										
UNIT SPECIFIC OBJECTIVES:										

CLINICAL DAY 2 - page 3

APPLICATION OF KNOWLEDGE

---

1. **Neuro Assessment** (at least include LOC, pupils, motor movement)

CV Assessment (at least include BP, P, peripheral pulses, edema)

---

2. **Cardiac Enzymes**

Type	Actual Value	Normal/Abnormal	?Cause, if abnormal

---

3. **ECG STRIPS**

- on the back of the strip analyze P wave, PR interval, QRS complex, ST segment, T wave, rate (s) and impression

7

CLINICAL DAY 3 & 4

APPLICATION OF KNOWLEDGE	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
APPLICATION OF KNOWLEDGE:										
1. Complete a basic respiratory assessment.										
2. Accurately record assessment (on last page).										
3. Do chest physio:										
a) with help										
b) without help										
4. Assist a patient who has been ordered:										
a) deep breathing and coughing										
b) passive range of motion (ROM)										
c) active ROM										
d) incentive spirometer										
5. Bag a patient with supervision.										
6. Explore suctioning routine by:										
a) observing a suction/instillation procedure										
b) setting up a suction tray:										
i) with help										
ii) without help										
c) assisting with a sectuion/instillation procedure by:										
i) being the "bagger" with supervision and										
then(ii) being the "suctioner" with supervision										
7. Find a ventilated patient and:										
a) identify the ventilator settings on the machine.										
b) relate the settings to that patient										
c) review the RT's sheet and record the actual Vc and VT (on the last page)										
d) locate the aerosol chamber and the button/switch for aerosol administration.										
8. Draw a blood gas from an arterial line:										
a) with supervision										
b) without supervision										

CLINICAL DAY 3 & 4 - page 2

APPLICATION OF KNOWLEDGE	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
8. Draw a blood gas from an arterial line. This includes:										
a) preparing the syringe										
b) explaining and positioning patient as appropriate										
c) labelling specimen correctly										
d) completing appropriate requisition										
e) taking it to the blood gas lab										
f) investigating how blood gases usually get to the lab										
9. Locate the blood gas results and copy 3 sets that range over a 24 hour period (on the last page) (include F10^2, LMV/AC/CPAP/PEEP)										
10. Do arterial stabs, if indicated, with instructor's supervision.										
SAFETY AND DEPENDABILITY:										
1. Follow UAH and ICU policies.										
2. Provide safe care for the arterial line by:										
a) balancing and calibrating with supervision										
b) using aseptic technique when withdrawing blood										
c) checking the site and waveform pattern.										
3. Provide safe care when doing arterial stabs by:										
a) land marking correctly										
b) using aseptic technique										
c) applying pressure as required										
d) observing the site after the stab										
4. Provide for physical patient safety.										
5. Communicate changes in patient to nurse buddy.										
6. Request assistance as needed.										
7. Provide accurate verbal report.										
8. Accept responsibility for own actions.										
9. Identify areas of weakness in practice to appropriate personnel.										

CLINICAL DAY 3 & 4 - page 3

APPLICATION OF KNOWLEDGE

	Recognized Term			Need Guidance			Confident			COMMENTS
	Day	Week 5	Week 8	Day	Week 5	Week 8	Day	Week 5	Week 8	
INITIATIVE:										
1. Offer assistance to co-workers (e.g.: help with mouthcare, skin care and positioning)										
2. Seek feedback regarding skills and knowledge.										
3. Utilize available resources to increase knowledge or skills.										
ATTITUDES AND PROFESSIONAL BEHAVIOR:										
1. Acknowledge own limitations.										
2. Is receptive to suggestions from others.										
3. Respond appropriately to constructive criticism.										
4. Maintain a tolerant attitude.										
INTERPERSONAL RELATIONSHIPS:										
1. Demonstrate respect and kindness to patients, families and staff in part by: a) locating visitor lounge										
b) reviewing Unit visiting policies										
c) identifying usual staff break times										
2. Display tact.										
3. Identify support personnel and their roles.										
UNIT SPECIFIC OBJECTIVES:										

CLINICAL DAY 3 & 4 - page 4

APPLICATION OF KNOWLEDGE

1. **Respiratory Assessment**

2. Record each blood gas and other information. Analyze and bring to next class day.

	#1	#2	#3
time			
F_1O^2			
mode			
PEEP			
pO^2			
pCO^2			
H			
Bicarb/serum CO^2			
O^2 saturation			

IMPRESSION:

3. In addition:
   a) calculate the Vc and VT

   b) compare these calculated values with the actual measured values from the RT's sheet. Do they differ? If so, why?

calculated	actual	difference
Vc	Vc	
VT	VT	

REASON(s):

Appendix D

Graduate Questionnaire

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM

Researcher: Kathleen Graham
R.N., B.Sc.N., Master of Nursing Candidate
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WMC 3H2.22
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Edmonton, Alberta T6G 2B7
Telephone: (403) 432-8206

Thesis Chairperson: Dr. Amy Zelmer
B.Sc.N., M.P.H., Ph.D.
3-2 University Hall
University of Alberta
Edmonton, Alberta T6G 2G3
Telephone: (403) 432-8181

March, 1988

Dear Graduate of the Critical Care Orientation Program:

The Critical Care Orientation Program (CCOP) is being evaluated and your assistance is requested by completing the enclosed questionnaire which requires between 20 and 30 minutes of your time.

The purpose of this follow-up study is to obtain information to guide future program planning. The study addresses the graduates' educational background, perceptions of the program, employment, and performance. Since no formal evaluation has been done, to date, you have the opportunity for input into future program planning, revision and success as well as assisting me in completing the research thesis requirement for the Master of Nursing degree.

Please fill out the questionnaire which is enclosed and your first supervisor will be asked to complete a second one. All questionnaires will be received by an independent research assistant who will insure that no one affiliated with the hospital (including myself) can identify the participants. No information from your personal record will be obtained. Only the information you and your supervisor provide will be used in the study.

Every effort has been made to insure your anonymity and confidentiality. All data will be grouped together and your responses cannot be individually identified. The code numbers are randomly assigned by the research assistant and are necessary for statistical analyses but will in no way are associated with individuals in the final research report.

At this time your permission is requested to contact your first intensive care supervisor, following the program, regarding his/her perceptions of your preparation and skills (see attached consent form).

You may choose not to participate in the study, to complete only the enclosed questionnaire, or to decline to answer any question in the questionnaire.

Copies of the completed study will be available at the following libraries: Nursing Education and Research, University of Alberta Hospitals; John Scott Library, Unviersity of Alberta; and the Alberta Association of Registered Nurses.

Thank you for your time and anticipated participation in this study. You may contact either myself or Dr. Zelmer if you require any assistance. Please return the questionnaire in the enclosed envelope by March 22, 1988.

Sincerely,

Kathleen Graham
Master of Nursing Candidate

enc.

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM

Please sign below if your first intensive care supervisor may be contacted.

Name (please print) ______________________________
Name of Supervisor ______________________________
Unit ______________________________
Your Signature ______________________________

Biographic Profile

1. Your place of residency immediately prior to the CCOP was:

    1. Northern Alberta
    2. North Central Alberta
    3. Central Alberta
    4. South Central Alberta
    5. Southern Alberta
    6. Other. Please specify ______________

2. Your place of residency immediately prior to the CCOP was:

    1. metropolitan (e.g., Edmonton, Calgary)
    2. urban (e.g., Lethbridge, Red Deer, St. Albert, Fort McMurray, etc.)
    3. rural (e.g., Smoky Lake, Hinton, Lac La Biche, etc.)

3. Your place of residence at present is:

    1. Edmonton
    2. Leduc
    3. St. Albert
    4. Other. Please specify ______________

4. Your age at commencement of the CCOP was:

    1. 20 - 24 years
    2. 25 - 29 years
    3. 30 - 34 years
    4. 35 - 39 years
    5. 40 years or older

5. Your gender is:

    1. Male
    2. Female

6. Your marital status at commencement of the CCOP was:

    1. Single
    2. Married
    3. Common Law
    4. Widowed
    5. Divorced
    6. Other. Please specify ______________

7. Number of children you had at commencement of the CCOP was:

    1. None
    2. One
    3. Two
    4. Three
    5. Four or more

Educational Profile

8. Your year of high school graduation was:

    1. Before 1960
    2. 1960 - 1964
    3. 1965 - 1969
    4. 1970 - 1974
    5. 1975 - 1979
    6. 1980 - 1984
    7. After 1984

9. The number of months (class and clinical) from start to completion of your Registered Nurse Program was:

    1. Less than 20 months
    2. 20 - 24 months
    3. 25 - 29 months
    4. 30 - 34 months
    5. 35 - 39 months
    6. 40 - 44 months
    7. More than 44 months

10. The type of institution in which you completed your Registered Nurse Program was:

    1. Hospital
    2. College
    3. University
    4. Other. Please specify ______________________

11. Year of graduation from your Registered Nurse Program was:

    1. Before 1960
    2. 1960 - 1964
    3. 1965 - 1969
    4. 1970 - 1974
    5. 1975 - 1979
    6. 1980 - 1984
    7. After 1984

12. Estimated days of critical care experience in your Registered Nurse Program was:

    1. None
    2. 1 - 5 days
    3. 6 - 10 days
    4. 11 - 20 days
    5. 21 - 30 days
    6. More than 30 days. Please specify ______________

13. Type of critical care experience in your Registered Nurse Program was:

    1. None
    2. Observation only
    3. Observation/Participation
    4. Mostly participation
    5. Other. Please specify ____________________

14. Other formal education programs completed include:

    1. None
    2. Certificate. Please specify ____________________
    3. Degree. Please specify ____________________
    4. Other. Please specify ____________________
    ____

15. Months and year of attendance in the CCOP was:

    1. April 28 - June 20, 1986
    2. June 9 - July 31, 1986
    3. September 29 - November 21, 1986
    4. November 10, 1986 - January 2, 1987
    5. January 19 - March 13, 1987
    6. March 16 - May 8, 1987
    7. June 8 - July 31, 1987
    8. September 8 - October 30, 1987

16. Your average grade in the CCOP was:

    1. 60 - 64%
    2. 65 - 69%
    3. 70 - 74%
    4. 75 - 79%
    5. 80 - 84%
    6. 85 - 89%
    7. 90 - 94%
    8. 95 - 100%

Pre-Program Employment

17. Number of years working in nursing (either part time or full time) prior to taking the CCOP was:

    1. None
    2. Less than 1 year
    3. 1 year to 2 years 11 months
    4. 3 years to 5 years 11 months
    5. 6 years to 10 years 11 months
    6. 11 years to 14 years 11 months
    7. 15 years or more

18. Number of years of critical care experience prior to taking the CCOP was:

    1. None
    2. Less than 1 year
    3. 1 year to 2 years 11 months
    4. 3 years to 5 years 11 months
    5. 6 years to 10 years 11 months
    6. 11 years to 14 years 11 months
    7. 15 years or more

19. Employment status immediately prior to taking the CCOP was:

    1. Employed in nursing full time
    2. Employed in nursing part time
    3. Employed, but not in nursing
    4. Unemployed
    5. Student
    6. Other. Please specify ______________________

20. If employed in nursing, your area of employment immediately prior to taking the CCOP was:

    1. Surgical ward
    2. Medical ward
    3. Pediatrics
    4. Obstetrics
    5. Emergency
    6. Intensive Care
    7. Post Anaesthetic Recovery Room
    8. Operating Room
    9. Other. Please specify ______________________

21. If employed in nursing, your position was:

    1. Staff Nurse
    2. Head Nurse, Unit Supervisor
    3. Permanent Acting Charge Nurse on Shift
    4. Area Supervisor
    5. Instructor
    6. Other. Please specify ____________________

22. If employed in nursing, the type of facility in which you were employed immediately prior to taking the CCOP was:

    1. Active treatment hospital
       - approximate number of beds ______
    2. Chronic facility
    3. Other. Please specify ____________________

Influencing Factors

23. You first heard about the CCOP through:

    1. Alberta Association of Registered Nurses
    2. Acquaintance
    3. Former CCOP student
    4. Instructor
    5. Advertising
    6. Personal inquiry
    7. Employment interview
    8. Other. Please specify ____________________

24. Your main reason for taking the CCOP was:

    1. Requirement to maintain employment
    2. Promotion opportunity
    3. Desire for change
    4. Other. Please specify ____________________

Post-Program Employment

25. Employment upon completion of the CCOP was:

    1. 3A1
    2. 3A2
    3. 4A4
    4. 5G3
    5. Other. Please specify ____________________

26. Are you still employed in the unit you worked in upon completion of the CCOP?

    1. Yes. Please proceed to the next page.
    2. No. Please proceed to Question 27.

27. If you are no longer employed in that unit, you are currently:

    1. Employed in another critical care unit at UAH
    2. Employed in another critical care unit at another hospital
    3. Employed in general nursing at UAH
    4. Employed in general nursing at another hospital
    5. Unemployed
    6. Other. Please specify ____________________

28. Why did you leave the position you first had after completion of the program?

Clinical Profile

The following statements describe activities commonly carried out by critical care nurses. Please choose the response that best describes you.

In the left-hand column circle the number that reflects the percentage of patients with whom you carry out each activity. If the activity is carried out in your area but you have not had the opportunity, choose 0%.
In the right-hand column please circle the number that reflects how well you carry out each activity now.

Not applicable (N/A) should only be used when the activity is impossible or inappropriate. For example, it is highly unlikely that you monitor intracranial pressure if you nurse patients in the Coronary Care Unit.

Percentage of Patients		Your Performance
N/A 0- 20% 21- 40% 41- 60% 61- 80% 81-100%		N/A Fumbling Especially Capable
0 1 2 3 4 5		0 1 2 3 4 5
	NEUROLOGY SYSTEM	
	Assessment	
	Evaluate neurologic status (including pupils, motor movement and orientation) for	
0 1 2 3 4 5	- a conscious patient	0 1 2 3 4 5
0 1 2 3 4 5	- an unconscious patient	0 1 2 3 4 5
0 1 2 3 4 5	Accurately complete a Glasgow Coma Scale (GCS)	0 1 2 3 4 5
0 1 2 3 4 5	Accurately complete a spinal sign record	0 1 2 3 4 5
	Management	
0 1 2 3 4 5	Care for a patient with an abnormally elevated intracranial pressure	0 1 2 3 4 5
0 1 2 3 4 5	Care for a patient with intracranial pressure monitoring	0 1 2 3 4 5
0 1 2 3 4 5	Institute protective drainage of cerebrospinal fluid (CSF)	0 1 2 3 4 5
	Care for a patient with	
0 1 2 3 4 5	- halo traction	0 1 2 3 4 5
0 1 2 3 4 5	- Gardner Wells Tongs	0 1 2 3 4 5
0 1 2 3 4 5	- warming/cooling blanket	0 1 2 3 4 5

Percentage of Patients		Your Performance
0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 N/A 1 Fumbling 2 3 4 5 Especially Capable

CARDIOVASCULAR SYSTEM

Assessment

0 1 2 3 4 5	Auscultate normal heart sounds (S1, S2)	0 1 2 3 4 5
	Auscultate abnormal heart sounds	
0 1 2 3 4 5	- S3	0 1 2 3 4 5
0 1 2 3 4 5	- S4	0 1 2 3 4 5
0 1 2 3 4 5	- murmur	0 1 2 3 4 5
0 1 2 3 4 5	- rub	0 1 2 3 4 5
0 1 2 3 4 5	Assess jugular vein distention	0 1 2 3 4 5
0 1 2 3 4 5	Check apical and radial pulses	0 1 2 3 4 5
	Assess blood pressure (BP) by	
0 1 2 3 4 5	- palpation	0 1 2 3 4 5
0 1 2 3 4 5	- dynamap	0 1 2 3 4 5
0 1 2 3 4 5	- arterial line	0 1 2 3 4 5

Management

	Care for a patient with a	
0 1 2 3 4 5	- peripheral intravenous	0 1 2 3 4 5
0 1 2 3 4 5	- arterial line	0 1 2 3 4 5
0 1 2 3 4 5	- central venous catheter/central line	0 1 2 3 4 5
0 1 2 3 4 5	- temporary pacemaker	0 1 2 3 4 5
0 1 2 3 4 5	Defibrillate according to unit and hospital policy	0 1 2 3 4 5
	Care for a patient with a pulmonary artery (PA) catheter by	
0 1 2 3 4 5	- monitoring pressures	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining wedge readings	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining cardiac output values	0 1 2 3 4 5
0 1 2 3 4 5	- notifying appropriate personnel and instituting measures to deal with PA line problems	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining mixed venous gases	0 1 2 3 4 5

Percentage of Patients		Your Performance
0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 N/A 1 Fumbling 2 3 4 5 Especially Capable

Electrocardiography (EKG)

	Recognize and institute appropriate intervention based on EKG rhythm strip analysis for	
0 1 2 3 4 5	- normal sinus rhythm	0 1 2 3 4 5
0 1 2 3 4 5	- sinus bradycardia	0 1 2 3 4 5
0 1 2 3 4 5	- sinus tachycardia	0 1 2 3 4 5
0 1 2 3 4 5	- premature atrial contractions	0 1 2 3 4 5
0 1 2 3 4 5	- junction rhythm	0 1 2 3 4 5
0 1 2 3 4 5	- accelerated junctional rhythm	0 1 2 3 4 5
0 1 2 3 4 5	- premature junctional contractions	0 1 2 3 4 5
	- heart blocks	
0 1 2 3 4 5	- 1st degree	0 1 2 3 4 5
0 1 2 3 4 5	- 2nd degree, type I (Wenkebach)	0 1 2 3 4 5
0 1 2 3 4 5	- 2nd degree, type II (Classic)	0 1 2 3 4 5
0 1 2 3 4 5	- 3rd degree (Complete)	0 1 2 3 4 5
0 1 2 3 4 5	- ventricular tachycardia	0 1 2 3 4 5
0 1 2 3 4 5	- ventricular fibrillation	0 1 2 3 4 5
0 1 2 3 4 5	- idioventricular rhythm	0 1 2 3 4 5
0 1 2 3 4 5	- premature ventricular contractions	0 1 2 3 4 5
0 1 2 3 4 5	- asystole	0 1 2 3 4 5
0 1 2 3 4 5	- electromechanical disassociation (EMD)	0 1 2 3 4 5
0 1 2 3 4 5	Obtain a 12 lead EKG	0 1 2 3 4 5

RESPIRATORY SYSTEM

Assessment

	Assess respiratory status by evaluating rate, rhythm, depth, and chest wall movement for	
0 1 2 3 4 5	- a patient spontaneously breathing	0 1 2 3 4 5
0 1 2 3 4 5	- a ventilated patient	0 1 2 3 4 5
	Auscultate air entry and identify	
0 1 2 3 4 5	- bronchial breathsounds	0 1 2 3 4 5
0 1 2 3 4 5	- vesicular breathsounds	0 1 2 3 4 5
0 1 2 3 4 5	- crackles	0 1 2 3 4 5
0 1 2 3 4 5	- wheezes	0 1 2 3 4 5

Percentage of Patients 0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		Your Performance 0 N/A 1 Fumbling 2 3 4 5 Especially Capable
0 1 2 3 4 5		0 1 2 3 4 5

Management

	Care for a patient receiving oxygen (O2) by	
0 1 2 3 4 5	- nasal prongs	0 1 2 3 4 5
0 1 2 3 4 5	- mask	0 1 2 3 4 5
	Care for a patient with an endotracheal tube by	
0 1 2 3 4 5	- suctioning and instilling	0 1 2 3 4 5
0 1 2 3 4 5	- using minimal cuff inflation technique	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining sputum for culture and sensitivity (C+S)	0 1 2 3 4 5
0 1 2 3 4 5	- bagging a patient with a manual resuscitator	0 1 2 3 4 5
0 1 2 3 4 5	Care for a patient with a tracheostomy	0 1 2 3 4 5
	Administer aerosol medications by	
0 1 2 3 4 5	- mask	0 1 2 3 4 5
0 1 2 3 4 5	- ventilator nebulizer	0 1 2 3 4 5
0 1 2 3 4 5	Care for a patient with an underwater seal drainage system (e.g., Pleurevac)	0 1 2 3 4 5
	Obtain arterial blood gas samples by	
0 1 2 3 4 5	- arterial puncture	0 1 2 3 4 5
0 1 2 3 4 5	- indwelling arterial catheter	0 1 2 3 4 5
0 1 2 3 4 5	Evaluate arterial blood gas results	0 1 2 3 4 5

GASTROINTESTINAL SYSTEM

Assessment

0 1 2 3 4 5	Auscultate bowel sounds	0 1 2 3 4 5
	Identify	
0 1 2 3 4 5	- ascites	0 1 2 3 4 5
0 1 2 3 4 5	- jaundice	0 1 2 3 4 5
	Distinguish typical drainage for	
0 1 2 3 4 5	- G tube	0 1 2 3 4 5
0 1 2 3 4 5	- J tube	0 1 2 3 4 5
0 1 2 3 4 5	- D tube	0 1 2 3 4 5
0 1 2 3 4 5	- ileostomy	0 1 2 3 4 5
0 1 2 3 4 5	- colostomy	0 1 2 3 4 5

Percentage of Patients		Your Performance
N/A 0- 20% 21- 40% 41- 60% 61- 80% 81-100%		N/A Fumbling Especially Capable
0 1 2 3 4 5		0 1 2 3 4 5
	Assess gastric drainage for	
0 1 2 3 4 5	- amount, color and odor	0 1 2 3 4 5
0 1 2 3 4 5	- acid base (pH) balance	0 1 2 3 4 5
0 1 2 3 4 5	- blood by Hemastix	0 1 2 3 4 5

Management

	Care for a patient with a nasogastric (NG) or enteral feeding tube (Biosearch, Keofeed, Dobhoff) by	
0 1 2 3 4 5	- inserting the tube	0 1 2 3 4 5
0 1 2 3 4 5	- determining position and patency	0 1 2 3 4 5
0 1 2 3 4 5	- administering ordered feeding solution	0 1 2 3 4 5
0 1 2 3 4 5	- assessing tolerance by aspirating	0 1 2 3 4 5
	Care for a patient with a	
0 1 2 3 4 5	- Blakemore	0 1 2 3 4 5
0 1 2 3 4 5	- Penrose	0 1 2 3 4 5
0 1 2 3 4 5	- Jackson Pratt	0 1 2 3 4 5
0 1 2 3 4 5	- Hemovac/Portovac	0 1 2 3 4 5
0 1 2 3 4 5	- Axiom	0 1 2 3 4 5
0 1 2 3 4 5	- Saratoga	0 1 2 3 4 5

GENITOURINARY SYSTEM

Assessment

0 1 2 3 4 5	Assess amount, color and clarity of urine	0 1 2 3 4 5
0 1 2 3 4 5	Test urine for sugar, acetone and blood	0 1 2 3 4 5

Management

	Care for a patient with an indwelling urinary catheter by	
0 1 2 3 4 5	- inserting a foley	0 1 2 3 4 5
	- obtaining specimens for	
0 1 2 3 4 5	- complete/routine and microbiology (R+M)	0 1 2 3 4 5
0 1 2 3 4 5	- culture and sensitivity (C+S)	0 1 2 3 4 5
0 1 2 3 4 5	- ensuring pericare is done at least q4h	0 1 2 3 4 5

Percentage of Patients 0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		Your Performance 0 N/A 1 Fumbling 2 3 4 5 Especially Capable
	INTRAVENOUS THERAPY	
	Management	
0 1 2 3 4 5	Initate a peripheral intravenous line	0 1 2 3 4 5
0 1 2 3 4 5	Utilize infusion pumps as necessary	0 1 2 3 4 5
0 1 2 3 4 5	Maintain total parenteral infusion (TPN)	0 1 2 3 4 5
0 1 2 3 4 5	Obtain type and cross match specimen	0 1 2 3 4 5
	Administer the following blood and blood products	
0 1 2 3 4 5	- packed cells	0 1 2 3 4 5
0 1 2 3 4 5	- platelets	0 1 2 3 4 5
0 1 2 3 4 5	- plasma	0 1 2 3 4 5
0 1 2 3 4 5	- albumin	0 1 2 3 4 5
0 1 2 3 4 5	- other (please specify) ________________	0 1 2 3 4 5
0 1 2 3 4 5	Accurately perform drug calculations	0 1 2 3 4 5
	Identify the following medications in terms of class, desired effects, side effects, and precautions and correctly administer	
0 1 2 3 4 5	- Dopamine	0 1 2 3 4 5
0 1 2 3 4 5	- Dobutrex	0 1 2 3 4 5
0 1 2 3 4 5	- Sodium Nitroprusside	0 1 2 3 4 5
0 1 2 3 4 5	- Nitroglycerine	0 1 2 3 4 5
0 1 2 3 4 5	- Lidocaine	0 1 2 3 4 5
0 1 2 3 4 5	- Insulin	0 1 2 3 4 5
0 1 2 3 4 5	- Heparin	0 1 2 3 4 5
0 1 2 3 4 5	- Antibiotics	0 1 2 3 4 5
0 1 2 3 4 5	- Analgesics/Sedatives	0 1 2 3 4 5
0 1 2 3 4 5	- Antiarrhythmics	0 1 2 3 4 5
	MUSCULOSKELETAL SYSTEM	
	Assessment	
0 1 2 3 4 5	Assess skin integrity, color, temperature, edema	0 1 2 3 4 5
0 1 2 3 4 5	Assess any wounds noting location, size, color, temperature and discharge	0 1 2 3 4 5

Percentage of Patients		Your Performance
0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 N/A 1 Fumbling 2 3 4 5 Especially Capable
0 1 2 3 4 5	Assess distal circulation	0 1 2 3 4 5

Management

0 1 2 3 4 5	Ensure mouth, eye, skin care needs are met	0 1 2 3 4 5
0 1 2 3 4 5	Position patient in anatomic alignment and turn	0 1 2 3 4 5
0 1 2 3 4 5	Maintain traction set up with free hanging weights as ordered	0 1 2 3 4 5
	Cleanse pin sites for	
0 1 2 3 4 5	- Gardner Wells Tongs	0 1 2 3 4 5
0 1 2 3 4 5	- halo jackets	0 1 2 3 4 5
0 1 2 3 4 5	- Steinman pins	0 1 2 3 4 5
0 1 2 3 4 5	- external fixators	0 1 2 3 4 5
0 1 2 3 4 5	Provide cast care	0 1 2 3 4 5
	Use aids as ordered	
0 1 2 3 4 5	- splints	0 1 2 3 4 5
0 1 2 3 4 5	- thromboembolitic stockings (TEDS)	0 1 2 3 4 5
0 1 2 3 4 5	- air mattress	0 1 2 3 4 5
	Supervise or provide exercise as ordered in consultation with the physiotherapist	
0 1 2 3 4 5	- passive range of motion	0 1 2 3 4 5
0 1 2 3 4 5	- active range of motion	0 1 2 3 4 5
0 1 2 3 4 5	- deep breathing and coughing	0 1 2 3 4 5

PSYCHOSOCIAL

	Care for a patient and family by	
0 1 2 3 4 5	- orientating to visitor lounge	0 1 2 3 4 5
0 1 2 3 4 5	- reviewing unit visiting policies	0 1 2 3 4 5
	- mobilizing other services in consultation with the charge nurse	
0 1 2 3 4 5	- pastoral care	0 1 2 3 4 5
0 1 2 3 4 5	- social services	0 1 2 3 4 5
	- providing stable patient and family with	
0 1 2 3 4 5	- time for visiting	0 1 2 3 4 5
0 1 2 3 4 5	- privacy	0 1 2 3 4 5

GENERAL INFORMATION

In general, I would describe the nursing care I deliver as	Fumbling				Especially Capable
	1	2	3	4	5
I believe the preceding questionnaire provides a true reflection of my abilities	Strongly Disagree				Strongly Agree
	1	2	3	4	5
The preceding questionnaire has been thorough	Strongly Disagree				Strongly Agree
	1	2	3	4	5

Please add any comments you wish to make in the space provided below.

Thank you for your time and participation in this survey.

Appendix E

Supervisor Questionnaire

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM

Researcher: Kathleen Graham
R.N., B.Sc.N., Master of Nursing Candidate
University of Alberta Hospitals
WMC 3H2.22
8440 - 112 Street
Edmonton, Alberta T6G 2B7
Telephone: (403) 432-8206

Thesis Chairperson: Dr. Amy Zelmer
B.Sc.N., M.P.H., Ph.D.
3-2 University Hall
University of Alberta
Edmonton, Alberta T6G 2G3
Telephone: (403) 432-8181

March, 1988

Dear Supervisor:

As you are already aware I am conducting a follow-up study of the Critical Care Orientation Program (CCOP) to guide future program planning. The study addresses the graduates' educational background, perceptions of the program, employment, and performance. Since no formal evaluation has been done to date, you have the opportunity to add your unique administrative perspective. In addition to providing data to guide program planning, revision and future success you will also be assisting me in meeting the research thesis requirement for the Master of Nursing degree.

Please complete the following questionnaire that addresses your general perceptions of the graduates of the program as well as a basic description of your unit in terms of the skills generally utilized by your nursing staff. The second questionnaire you may receive asks you to evaluate individual graduates of the progaram who have given their consent for you to do so. Any questionnaire will require between 20 to 30 minutes of your time. Both the graduate's and the supervisor's evaluations will be included to consider learner and administrative perspectives.

An independent research assistant will randomly assign a code number which is necessary for statistical analyses. No one affiliated with the University of Alberta Hospitals (including myself) will be able to identify the participants. Every effort has been made to insure your anonymity and confidentiality. All data will be grouped together and your responses will not be individually identified. You may choose to not participate in the study, to complete any number of questionnaires sent to you, or to decline to answer any question in any questionnaire.

Copies of the completed study will be available at the following libraries: Nursing Education and Research, University of Alberta Hospitals; John Scott Library, University of Alberta; and the Alberta Association of Registered Nurses. In addition, a summary of the findings will be sent to each nursing unit supervisor upon completion of the study.

Thank you for your time and anticipated participation in this study. You may contact either myself or Dr. Zelmer if you require any assistance. Please return the questionnaire in the enclosed envelope by March 22, 1988.

Sincerely,

Kathleen Graham
Master of Nursing Candidate

enc.

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM

Researcher: Kathleen Graham
R.N., B.Sc.N., Master of Nursing Candidate
University of Alberta Hospitals
WMC 3H2.22
8440 - 112 Street
Edmonton, Alberta T6G 2B7
Telephone: (403) 432-8206

Thesis Chairperson: Dr. Amy Zelmer
B.Sc.N., M.P.H., Ph.D.
3-2 University Hall
University of Alberta
Edmonton, Alberta T6G 2G3
Telephone: (403) 432-8181

March, 1988

Dear Supervisor:

Re:

The above named nurse has participated in the Critical Care Orientation Program Evaluation and has given consent to contact you and ask you to complete an evaluation of this nurse.

Please complete the following questionnaire as completely and accurately as possible. Do not identify the nurse in any way on the form. The code on the questionnaire allows an independent research assistant to match your response with the nurse's while promoting the anonymity of the nurse. Please return the questionnaire in the envelope provided whether or not you chose to complete it.

Your participation is voluntary and you may choose to omit any question or withdraw from the study at any time. There are no direct benefits or risks to you. All responses will be kept confidential. A summary of the results will be forwarded to you and a complete copy of the study will be available in the Nursing Education and Research Library. Thank you for your time and anticipated participation.

Sincerely,

Kathleen Graham
Master of Nursing Candidate

enc.

Clinical Profile

The following statements describe activities commonly carried out by critical care nurses. Please choose the response that best describes this nurse.

In the right-hand column please circle the number that reflects how well this nurse carries out each activity now.

Not applicable (N/A) should only be used when the activity is impossible or inappropriate. For example, it is highly unlikely that you monitor intracranial pressure if you nurse patients in the Coronary Care Unit.

	Performance					
	N/A	Fumbling				Especially Capable
	0	1	2	3	4	5
NEUROLOGY SYSTEM						
Assessment						
Evaluate neurologic status (including pupils, motor movement and orientation) for						
- a conscious patient	0	1	2	3	4	5
- an unconscious patient	0	1	2	3	4	5
Accurately complete a Glasgow Coma Scale (GCS)	0	1	2	3	4	5
Accurately complete a spinal sign record	0	1	2	3	4	5
Management						
Care for a patient with an abnormally elevated intracranial pressure	0	1	2	3	4	5
Care for a patient with intracranial pressure monitoring	0	1	2	3	4	5
Institute protective drainage of cerebrospinal fluid (CSF)	0	1	2	3	4	5
Care for a patient with						
- halo traction	0	1	2	3	4	5
- Gardner Wells Tongs	0	1	2	3	4	5
- warming/cooling blanket	0	1	2	3	4	5

	Performance					
	N/A	Fumbling				Especially Capable
	0	1	2	3	4	5

CARDIOVASCULAR SYSTEM

Assessment

Auscultate normal heart sounds (S1, S2)	0	1	2	3	4	5
Auscultate abnormal heart sounds						
- S3	0	1	2	3	4	5
- S4	0	1	2	3	4	5
- murmur	0	1	2	3	4	5
- rub	0	1	2	3	4	5
Assess jugular vein distention	0	1	2	3	4	5
Check apical and radial pulses	0	1	2	3	4	5
Assess blood pressure (BP) by						
- palpation	0	1	2	3	4	5
- dynamap	0	1	2	3	4	5
- arterial line	0	1	2	3	4	5

Management

Care for a patient with a						
- peripheral intravenous	0	1	2	3	4	5
- arterial line	0	1	2	3	4	5
- central venous catheter/central line	0	1	2	3	4	5
- temporary pacemaker	0	1	2	3	4	5
Defibrillate according to unit and hospital policy	0	1	2	3	4	5
Care for a patient with a pulmonary artery (PA) catheter by						
- monitoring pressures	0	1	2	3	4	5
- obtaining wedge readings	0	1	2	3	4	5
- obtaining cardiac output values	0	1	2	3	4	5
- notifying appropriate personnel and instituting measures to deal with PA line problems	0	1	2	3	4	5
- obtaining mixed venous gases	0	1	2	3	4	5

	Performance					
	N/A	Fumbling				Especially Capable
	0	1	2	3	4	5
Electrocardiography (EKG)						
Recognize and institute appropriate intervention based on EKG rhythm strip analysis	0	1	2	3	4	5
Obtain a 12 lead EKG	0	1	2	3	4	5
RESPIRATORY SYSTEM						
Assessment						
Assess respiratory status by evaluating rate, rhythm, depth, and chest wall movement for						
- a patient spontaneously breathing	0	1	2	3	4	5
- a ventilated patient	0	1	2	3	4	5
Auscultate air entry and identify						
- bronchial breathsounds	0	1	2	3	4	5
- vesicular breathsounds	0	1	2	3	4	5
- crackles	0	1	2	3	4	5
- wheezes	0	1	2	3	4	5
Management						
Care for a patient receiving oxygen (O2) by						
- nasal prongs	0	1	2	3	4	5
- mask	0	1	2	3	4	5
Care for a patient with an endotracheal tube by						
- suctioning and instilling	0	1	2	3	4	5
- using minimal cuff inflation technique	0	1	2	3	4	5
- obtaining sputum for culture and sensitivity (C+S)	0	1	2	3	4	5
- bagging a patient with a manual resuscitator	0	1	2	3	4	5
Care for a patient with a tracheostomy	0	1	2	3	4	5
Administer aerosol medications by						
- mask	0	1	2	3	4	5
- ventilator nebulizer	0	1	2	3	4	5
Care for a patient with an underwater seal drainage system (e.g., Pleurevac)	0	1	2	3	4	5

	Performance					
	N/A	Fumbling				Especially Capable
	0	1	2	3	4	5
Obtain arterial blood gas samples by						
- arterial puncture	0	1	2	3	4	5
- indwelling arterial catheter	0	1	2	3	4	5
Evaluate arterial blood gas results	0	1	2	3	4	5

GASTROINTESTINAL SYSTEM

Assessment

Auscultate bowel sounds	0	1	2	3	4	5
Identify						
- ascites	0	1	2	3	4	5
- jaundice	0	1	2	3	4	5
Distinguish typical drainage for						
- G tube	0	1	2	3	4	5
- J tube	0	1	2	3	4	5
- D tube	0	1	2	3	4	5
- ileostomy	0	1	2	3	4	5
- colostomy	0	1	2	3	4	5
Assess gastric drainage for						
- amount, color and odor	0	1	2	3	4	5
- acid base (pH) balance	0	1	2	3	4	5
- blood by Hemastix	0	1	2	3	4	5

Management

Care for a patient with a nasogastric (NG) or enteral feeding tube (Biosearch, Keofeed, Dobhoff) by						
- inserting the tube	0	1	2	3	4	5
- determining position and patency	0	1	2	3	4	5
- administering ordered feeding solution	0	1	2	3	4	5
- assessing tolerance by aspirating	0	1	2	3	4	5
Care for a patient with a						
- Blakemore	0	1	2	3	4	5
- Penrose	0	1	2	3	4	5
- Jackson Pratt	0	1	2	3	4	5
- Hemovac/Portovac	0	1	2	3	4	5
- Axiom	0	1	2	3	4	5
- Saratoga	0	1	2	3	4	5

	Performance					
	N/A 0	Fumbling 1	2	3	4	Especially Capable 5
GENITOURINARY SYSTEM						
Assessment						
Assess amount, color and clarity of urine	0	1	2	3	4	5
Test urine for sugar, acetone and blood	0	1	2	3	4	5
Management						
Care for a patient with an indwelling urinary catheter by						
- inserting a foley	0	1	2	3	4	5
- obtaining specimens for						
- complete/routine and microbiology (R+M)	0	1	2	3	4	5
- culture and sensitivity (C+S)	0	1	2	3	4	5
- ensuring pericare is done at least q4h	0	1	2	3	4	5
INTRAVENOUS THERAPY						
Management						
Initate a peripheral intravenous line	0	1	2	3	4	5
Utilize infusion pumps as necessary	0	1	2	3	4	5
Maintain total parenteral infusion (TPN)	0	1	2	3	4	5
Obtain type and cross match specimen	0	1	2	3	4	5
Administer the following blood and blood products						
- packed cells	0	1	2	3	4	5
- platelets	0	1	2	3	4	5
- plasma	0	1	2	3	4	5
- albumin	0	1	2	3	4	5
- other (please specify) ______________	0	1	2	3	4	5
Accurately perform drug calculations	0	1	2	3	4	5

Performance

	N/A	Fumbling				Especially Capable
	0	1	2	3	4	5
Identify the following medications in terms of class, desired effects, side effects, and precautions and correctly administer						
- Dopamine	0	1	2	3	4	5
- Dobutrex	0	1	2	3	4	5
- Sodium Nitroprusside	0	1	2	3	4	5
- Nitroglycerine	0	1	2	3	4	5
- Lidocaine	0	1	2	3	4	5
- Insulin	0	1	2	3	4	5
- Heparin	0	1	2	3	4	5
- Antibiotics	0	1	2	3	4	5
- Analgesics/Sedatives	0	1	2	3	4	5
- Antiarrhythmics	0	1	2	3	4	5

MUSCULOSKELETAL SYSTEM

Assessment

Assess skin integrity, color, temperature, edema	0	1	2	3	4	5
Assess any wounds noting location, size, color, temperature and discharge	0	1	2	3	4	5
Assess distal circulation	0	1	2	3	4	5

Management

Ensure mouth, eye, skin care needs are met	0	1	2	3	4	5
Position patient in anatomic alignment and turn	0	1	2	3	4	5
Maintain traction set up with free hanging weights as ordered	0	1	2	3	4	5
Cleanse pin sites for						
- Gardner Wells Tongs	0	1	2	3	4	5
- halo jackets	0	1	2	3	4	5
- Steinman pins	0	1	2	3	4	5
- external fixators	0	1	2	3	4	5
Provide cast care	0	1	2	3	4	5

	Performance					
	N/A	Fumbling				Especially Capable
	0	1	2	3	4	5
Use aids as ordered						
- splints	0	1	2	3	4	5
- thromboembolitic stockings (TEDS)	0	1	2	3	4	5
- air mattress	0	1	2	3	4	5
Supervise or provide exercise as ordered in consultation with the physiotherapist						
- passive range of motion	0	1	2	3	4	5
- active range of motion	0	1	2	3	4	5
- deep breathing and coughing	0	1	2	3	4	5

PSYCHOSOCIAL

Care for a patient and family by						
- orientating to visitor lounge	0	1	2	3	4	5
- reviewing unit visiting policies	0	1	2	3	4	5
- mobilizing other services in consultation with the charge nurse						
- pastoral care	0	1	2	3	4	5
- social services	0	1	2	3	4	5
- providing stable patient and family with						
- time for visiting	0	1	2	3	4	5
- privacy	0	1	2	3	4	5

GENERAL INFORMATION

	Fumbling				Especially Capable
In general, I would describe the nursing care the nurse delivers as	1	2	3	4	5
	Strongly Disagree				Strongly Agree
I believe the preceding questionnaire provides a true reflection of this nurse's abilities	1	2	3	4	5
	Strongly Disagree				Strongly Agree
The preceding questionnaire has been thorough	1	2	3	4	5

Please add any comments you wish to make in the space provided below.

Thank you for your time and participation in this survey.

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM

Researcher: Kathleen Graham
R.N., B.Sc.N., Master of Nursing Candidate
University of Alberta Hospitals
WMC 3H2.22
8440 - 112 Street
Edmonton, Alberta T6G 2B7
Telephone: (403) 432-8206

Thesis Chairperson: Dr. Amy Zelmer
B.Sc.N., M.P.H., Ph.D.
3-2 University Hall
University of Alberta
Edmonton, Alberta T6G 2G3
Telephone: (403) 432-8181

March, 1988

Dear Supervisor:

Please complete the attached questionnaire which addresses your general evaluation of the graduates of the Critical Care Orientation Program (CCOP) as well as a basic description of your unit in terms of the skills generally utilized by your nursing staff.

Circle the number in the left hand column that best estimates the usual frequency of selected nursing activities in your unit. If the activity is never carried out in your unit select "not appropriate" (NA).

Circle the number in the right hand column that best reflects the general clinical performance of CCOP graduates in your unit. If you have never had an opportunity to evaluate CCOP graduates on the selected nursing activity select "don't know".

Please return the questionnaire in the enclosed envelope. Thank you for your time and anticipated participation in this study.

Yours sincerely,

Kathleen Graham
Master of Nursing Candidate

enc.

Clinical Profile

Circle the number in the left hand column that best estimates the usual frequency of selected nursing activities in your unit. If the activity is never carried out in your unit select "not appropriate" (NA).

Circle the number in the right hand column that best reflects the general clinical performance of Critical Care Orientation Program (CCOP) graduates in your unit. If you have never had an opportunity to evaluate CCOP graduates on the selected nursing activity select "don't know".

Percentage of Patients		
0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 Don't Know 1 2 3 4 5 Especially Capable

NEUROLOGY SYSTEM

Assessment

	Evaluate neurologic status (including pupils, motor movement and orientation) for	
0 1 2 3 4 5	- a conscious patient	0 1 2 3 4 5
0 1 2 3 4 5	- an unconscious patient	0 1 2 3 4 5
0 1 2 3 4 5	Accurately complete a Glasgow Coma Scale (GCS)	0 1 2 3 4 5
0 1 2 3 4 5	Accurately complete a spinal sign record	0 1 2 3 4 5

Management

0 1 2 3 4 5	Care for a patient with an abnormally elevated intracranial pressure	0 1 2 3 4 5
0 1 2 3 4 5	Care for a patient with intracranial pressure monitoring	0 1 2 3 4 5
0 1 2 3 4 5	Institute protective drainage of cerebrospinal fluid (CSF)	0 1 2 3 4 5
	Care for a patient with	
0 1 2 3 4 5	- halo traction	0 1 2 3 4 5
0 1 2 3 4 5	- Gardner Wells Tongs	0 1 2 3 4 5
0 1 2 3 4 5	- warming/cooling blanket	0 1 2 3 4 5

Percentage of Patients		
0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 Don't Know 1 2 3 4 5 Especially Capable

CARDIOVASCULAR SYSTEM

Assessment

0 1 2 3 4 5	Auscultate normal heart sounds (S1, S2)	0 1 2 3 4 5
	Auscultate abnormal heart sounds	
0 1 2 3 4 5	- S3	0 1 2 3 4 5
0 1 2 3 4 5	- S4	0 1 2 3 4 5
0 1 2 3 4 5	- murmur	0 1 2 3 4 5
0 1 2 3 4 5	- rub	0 1 2 3 4 5
0 1 2 3 4 5	Assess jugular vein distention	0 1 2 3 4 5
0 1 2 3 4 5	Check apical and radial pulses	0 1 2 3 4 5
	Assess blood pressure (BP) by	
0 1 2 3 4 5	- palpation	0 1 2 3 4 5
0 1 2 3 4 5	- dynamap	0 1 2 3 4 5
0 1 2 3 4 5	- arterial line	0 1 2 3 4 5

Management

	Care for a patient with a	
0 1 2 3 4 5	- peripheral intravenous	0 1 2 3 4 5
0 1 2 3 4 5	- arterial line	0 1 2 3 4 5
0 1 2 3 4 5	- central venous catheter/central line	0 1 2 3 4 5
0 1 2 3 4 5	- temporary pacemaker	0 1 2 3 4 5
0 1 2 3 4 5	Defibrillate according to unit and hospital policy	0 1 2 3 4 5
	Care for a patient with a pulmonary artery (PA) catheter by	
0 1 2 3 4 5	- monitoring pressures	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining wedge readings	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining cardiac output values	0 1 2 3 4 5
0 1 2 3 4 5	- notifying appropriate personnel and instituting measures to deal with PA line problems	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining mixed venous gases	0 1 2 3 4 5

Percentage of Patients 0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 Don't Know 1 2 3 4 5 Especially Capable
	Electrocardiography (EKG)	
0 1 2 3 4 5	Recognize and institute appropriate intervention based on EKG rhythm strip analysis	0 1 2 3 4 5
0 1 2 3 4 5	Obtain a 12 lead EKG	0 1 2 3 4 5
	RESPIRATORY SYSTEM	
	Assessment	
	Assess respiratory status by evaluating rate, rhythm, depth, and chest wall movement for	
0 1 2 3 4 5	- a patient spontaneously breathing	0 1 2 3 4 5
0 1 2 3 4 5	- a ventilated patient	0 1 2 3 4 5
	Auscultate air entry and identify	
0 1 2 3 4 5	- bronchial breathsounds	0 1 2 3 4 5
0 1 2 3 4 5	- vesicular breathsounds	0 1 2 3 4 5
0 1 2 3 4 5	- crackles	0 1 2 3 4 5
0 1 2 3 4 5	- wheezes	0 1 2 3 4 5
	Management	
	Care for a patient receiving oxygen (O2) by	
0 1 2 3 4 5	- nasal prongs	0 1 2 3 4 5
0 1 2 3 4 5	- mask	0 1 2 3 4 5
	Care for a patient with an endotracheal tube by	
0 1 2 3 4 5	- suctioning and instilling	0 1 2 3 4 5
0 1 2 3 4 5	- using minimal cuff inflation technique	0 1 2 3 4 5
0 1 2 3 4 5	- obtaining sputum for culture and sensitivity (C+S)	0 1 2 3 4 5
0 1 2 3 4 5	- bagging a patient with a manual resuscitator	0 1 2 3 4 5
0 1 2 3 4 5	Care for a patient with a tracheostomy	0 1 2 3 4 5
	Administer aerosol medications by	
0 1 2 3 4 5	- mask	0 1 2 3 4 5
0 1 2 3 4 5	- ventilator nebulizer	0 1 2 3 4 5
0 1 2 3 4 5	Care for a patient with an underwater seal drainage system (e.g., Pleurevac)	0 1 2 3 4 5

Percentage of Patients 0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 Don't Know 1 2 3 4 5 Especially Capable
	Obtain arterial blood gas samples by	
0 1 2 3 4 5	- arterial puncture	0 1 2 3 4 5
0 1 2 3 4 5	- indwelling arterial catheter	0 1 2 3 4 5
0 1 2 3 4 5	Evaluate arterial blood gas results	0 1 2 3 4 5

GASTROINTESTINAL SYSTEM

Assessment

0 1 2 3 4 5	Auscultate bowel sounds	0 1 2 3 4 5
	Identify	
0 1 2 3 4 5	- ascites	0 1 2 3 4 5
0 1 2 3 4 5	- jaundice	0 1 2 3 4 5
	Distinguish typical drainage for	
0 1 2 3 4 5	- G tube	0 1 2 3 4 5
0 1 2 3 4 5	- J tube	0 1 2 3 4 5
0 1 2 3 4 5	- D tube	0 1 2 3 4 5
0 1 2 3 4 5	- ileostomy	0 1 2 3 4 5
0 1 2 3 4 5	- colostomy	0 1 2 3 4 5
	Assess gastric drainage for	
0 1 2 3 4 5	- amount, color and odor	0 1 2 3 4 5
0 1 2 3 4 5	- acid base (pH) balance	0 1 2 3 4 5
0 1 2 3 4 5	- blood by Hemastix	0 1 2 3 4 5

Management

	Care for a patient with a nasogastric (NG) or enteral feeding tube (Biosearch, Keofeed, Dobhoff) by	
0 1 2 3 4 5	- inserting the tube	0 1 2 3 4 5
0 1 2 3 4 5	- determining position and patency	0 1 2 3 4 5
0 1 2 3 4 5	- administering ordered feeding solution	0 1 2 3 4 5
0 1 2 3 4 5	- assessing tolerance by aspirating	0 1 2 3 4 5
	Care for a patient with a	
0 1 2 3 4 5	- Blakemore	0 1 2 3 4 5
0 1 2 3 4 5	- Penrose	0 1 2 3 4 5
0 1 2 3 4 5	- Jackson Pratt	0 1 2 3 4 5
0 1 2 3 4 5	- Hemovac/Portovac	0 1 2 3 4 5
0 1 2 3 4 5	- Axiom	0 1 2 3 4 5
0 1 2 3 4 5	- Saratoga	0 1 2 3 4 5

Percentage of Patients

0 N/A
1 0- 20%
2 21- 40%
3 41- 60%
4 61- 80%
5 81-100%

0 Don't Know
1
2
3
4
5 Especially Capable

GENITOURINARY SYSTEM

Assessment

0 1 2 3 4 5	Assess amount, color and clarity of urine	0 1 2 3 4 5
0 1 2 3 4 5	Test urine for sugar, acetone and blood	0 1 2 3 4 5

Management

	Care for a patient with an indwelling urinary catheter by	
0 1 2 3 4 5	- inserting a foley	0 1 2 3 4 5
	- obtaining specimens for	
0 1 2 3 4 5	- complete/routine and microbiology (R+M)	0 1 2 3 4 5
0 1 2 3 4 5	- culture and sensitivity (C+S)	0 1 2 3 4 5
0 1 2 3 4 5	- ensuring pericare is done at least q4h	0 1 2 3 4 5

INTRAVENOUS THERAPY

Management

0 1 2 3 4 5	Initate a peripheral intravenous line	0 1 2 3 4 5
0 1 2 3 4 5	Utilize infusion pumps as necessary	0 1 2 3 4 5
0 1 2 3 4 5	Maintain total parenteral infusion (TPN)	0 1 2 3 4 5
0 1 2 3 4 5	Obtain type and cross match specimen	0 1 2 3 4 5
	Administer the following blood and blood products	
0 1 2 3 4 5	- packed cells	0 1 2 3 4 5
0 1 2 3 4 5	- platelets	0 1 2 3 4 5
0 1 2 3 4 5	- plasma	0 1 2 3 4 5
0 1 2 3 4 5	- albumin	0 1 2 3 4 5
0 1 2 3 4 5	- other (please specify) ________________	0 1 2 3 4 5
0 1 2 3 4 5	Accurately perform drug calculations	0 1 2 3 4 5

Percentage of Patients 0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 Don't Know 1 2 3 4 5 Especially Capable
	Identify the following medications in terms of class, desired effects, side effects, and precautions and correctly administer	
0 1 2 3 4 5	- Dopamine	0 1 2 3 4 5
0 1 2 3 4 5	- Dobutrex	0 1 2 3 4 5
0 1 2 3 4 5	- Sodium Nitroprusside	0 1 2 3 4 5
0 1 2 3 4 5	- Nitroglycerine	0 1 2 3 4 5
0 1 2 3 4 5	- Lidocaine	0 1 2 3 4 5
0 1 2 3 4 5	- Insulin	0 1 2 3 4 5
0 1 2 3 4 5	- Heparin	0 1 2 3 4 5
0 1 2 3 4 5	- Antibiotics	0 1 2 3 4 5
0 1 2 3 4 5	- Analgesics/Sedatives	0 1 2 3 4 5
0 1 2 3 4 5	- Antiarrhythmics	0 1 2 3 4 5

MUSCULOSKELETAL SYSTEM

Assessment

0 1 2 3 4 5	Assess skin integrity, color, temperature, edema	0 1 2 3 4 5
0 1 2 3 4 5	Assess any wounds noting location, size, color, temperature and discharge	0 1 2 3 4 5
0 1 2 3 4 5	Assess distal circulation	0 1 2 3 4 5

Management

0 1 2 3 4 5	Ensure mouth, eye, skin care needs are met	0 1 2 3 4 5
0 1 2 3 4 5	Position patient in anatomic alignment and turn	0 1 2 3 4 5
0 1 2 3 4 5	Maintain traction set up with free hanging weights as ordered	0 1 2 3 4 5
	Cleanse pin sites for	
0 1 2 3 4 5	- Gardner Wells Tongs	0 1 2 3 4 5
0 1 2 3 4 5	- halo jackets	0 1 2 3 4 5
0 1 2 3 4 5	- Steinman pins	0 1 2 3 4 5
0 1 2 3 4 5	- external fixators	0 1 2 3 4 5
0 1 2 3 4 5	Provide cast care	0 1 2 3 4 5

Percentage of Patients 0 N/A 1 0- 20% 2 21- 40% 3 41- 60% 4 61- 80% 5 81-100%		0 Don't Know 1 2 3 4 5 Especially Capable
	Use aids as ordered	
0 1 2 3 4 5	- splints	0 1 2 3 4 5
0 1 2 3 4 5	- thromboembolitic stockings (TEDS)	0 1 2 3 4 5
0 1 2 3 4 5	- air mattress	0 1 2 3 4 5
	Supervise or provide exercise as ordered in consultation with the physiotherapist	
0 1 2 3 4 5	- passive range of motion	0 1 2 3 4 5
0 1 2 3 4 5	- active range of motion	0 1 2 3 4 5
0 1 2 3 4 5	- deep breathing and coughing	0 1 2 3 4 5
	PSYCHOSOCIAL	
	Care for a patient and family by	
0 1 2 3 4 5	- orientating to visitor lounge	0 1 2 3 4 5
0 1 2 3 4 5	- reviewing unit visiting policies	0 1 2 3 4 5
	- mobilizing other services in consultation with the charge nurse	
0 1 2 3 4 5	- pastoral care	0 1 2 3 4 5
0 1 2 3 4 5	- social services	0 1 2 3 4 5
	- providing stable patient and family with	
0 1 2 3 4 5	- time for visiting	0 1 2 3 4 5
0 1 2 3 4 5.	- privacy	0 1 2 3 4 5

GENERAL INFORMATION

	Fumbling				Especially Capable
In general, I would describe the nursing care the nurse delivers as	1	2	3	4	5
	Strongly Disagree				Strongly Agree
I believe the preceding questionnaire provides a true reflection of this nurse's abilities	1	2	3	4	5
	Strongly Disagree				Strongly Agree
The preceding questionnaire has been thorough	1	2	3	4	5

Please add any comments you wish to make in the space provided below.

Thank you for your time and participation in this survey.

Appendix F

First Reminder

EVALUATION OF THE CRITICAL CARE ORIENTATION PROGRAM

Researcher: Kathleen Graham
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Thesis Chairperson: Dr. Amy Zelmer
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Edmonton, Alberta T6G 2G3
Telephone: (403) 432-8181

March, 1988

Dear Graduate of the Critical Care Orientation Program:

The evaluation of the Critical Care Orientation Program is nearing completion. If you have already returned your questionnaire, I would like to thank you for your participation.

If you have not yet returned the questionnaire, I urge you to fill it out and mail it today. It is important that all graduates be represented because each of you has valuable insight into the program. If you require an additional copy of the questionnaire please call me at 437 - 2031.

The data will be used to refine the program and to complete the thesis requirement for a Master of Nursing degree. Thank you for your participation.

Yours truly,

Kathleen Graham
Master of Nursing Candidate

Appendix G

Second Reminder

EVALUATION OF THE CRITICAL CARE ORIENTATION

Researcher:
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April, 1988

Dear Graduate:

Please complete the enclosed questionnaire if you plan to participate in the evaluation of the Critical Care Orientation Program. The program is currently under review and as a graduate of the program you are uniquely qualified to contribute to this process. It will be more difficult to identify and meet the needs of future novice critical care nurses without the input of past participants such as yourself. If you remember those first few weeks and months in your first critical care unit you can appreciate how important this program can be for the beginner.

To assist you further an additional questionnaire has been enclosed. Please complete it and return it at your earliest convenience. If you have already participated thank you for your interest and commitment to excellence in nursing practice.

Sincerely,

Kathleen Graham

ENC.